

PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING AGENTS • SINCE 1915



HAROLD BOESCHENSTEIN

See page 84

Your Inventories Are His Problem

A CONOVER • MAST PUBLICATION

FEBRUARY, 1943

35 CENTS PER COPY

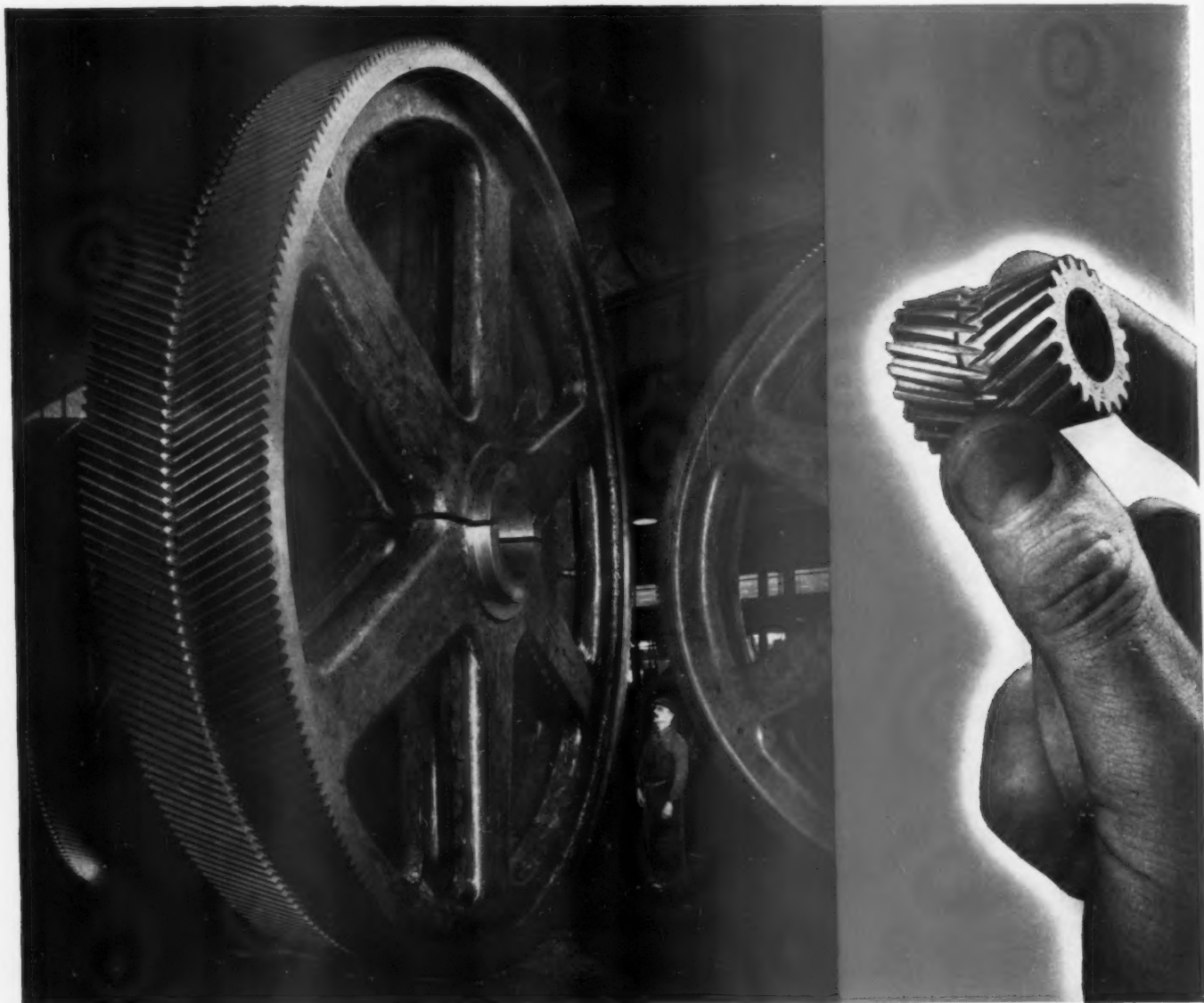
coopera-
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Bridgeport,
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S



THE RANGE OF PRODUCTS FOR *WAR*

THE large Falk steel herringbone gear weighs 39,375 lbs. The small Falk bronze gear weighs less than $\frac{1}{4}$ lb. Great as is this range in gears, it is no greater than the range of products demanded of industry for war and civilian requirements.

Faced with every type of mechanical problem, management today more than ever needs skilled help and suitable products for the job in hand.

Texaco Engineering Service and

Texaco Products have proved so successful that they are preferred by many industries, a few of which are listed in the panel.

A Texaco Engineer will be glad to cooperate with your production men in the selection of the most suitable Texaco Lubricants to increase the output of your plants.

Phone or write the nearest of more than 2300 distributing points throughout the 48 States or write to The Texas Company, 135 East 42nd Street, New York, N. Y.

THEY PREFER TEXACO

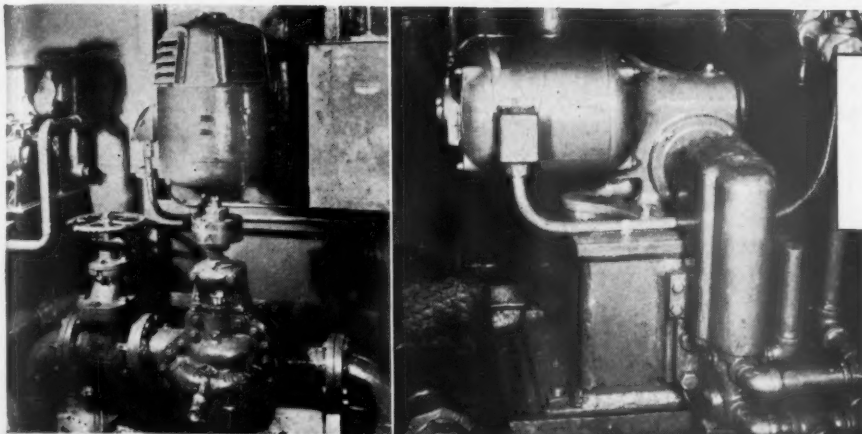
- ★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.
- ★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.
- ★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.
- ★ More locomotives and cars in the U. S. are lubricated with Texaco than with any other brand.
- ★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.



TEXACO Lubricants and Fuels

FOR ALL INDUSTRIES

TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY



Extreme Left—Century $7\frac{1}{2}$ horsepower, vertical mounted, direct current, drip proof water pump motor.

Left—Century $\frac{1}{2}$ horsepower motor driving a Diesel oil pump.

CENTURY MOTORS and GENERATORS

For the Toughest Sea-Going Service
Meet the Rigid War Requirements of
Naval and Merchant Marine
Applications

Century shipboard motors and generators are built to stand up under

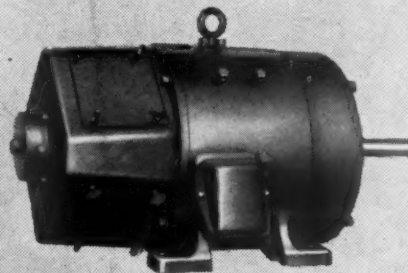
- The toughest sea-going service
- The shocks of gunfire and bombing
- The rigorous climatic conditions of the seven seas

They meet Navy Specifications 17M10 and 17M17, A.I.E.E., recommended practice on shipboard No. 45, and the Maritime Rules of Shipping.

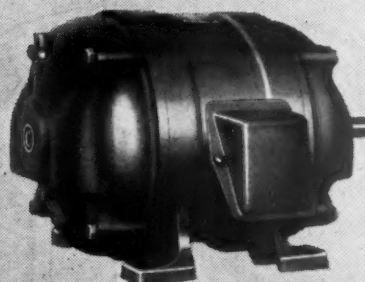
Century Motors' famous ability to "keep a-running" is daily being demonstrated and thoroughly proven on the high seas in applications such as those mentioned above.

Your nearest Century Application and Service Engineer will gladly tell you all the advantages of Century Motors for any job.

CENTURY ELECTRIC CO.
1806 Pine Street, St. Louis, Mo.
Offices and Stock Points in Principal Cities



$7\frac{1}{2}$ horsepower, direct current, ball bearing, fabricated steel, water proof Navy motor.



Century 2 horsepower squirrel cage fabricated steel motor with cast steel end brackets.

Among the many Naval and other marine applications of Century Motors that have been made and are being made today are the following:

Diesel fuel pump motors
Bilge pump motors
Transfer pump motors
Brine pump motors
Cooling water pumps
Fire pump motors
Capstain motors
Hoisting machinery motors
Pumps for fresh water stills
Air compressor motors
Refrigeration compressor motors
Steering gear motors
Fan and blower motors
Oil burner motors
Generators and motor generating sets for light, power, and communication
Workshop machinery motors

308

One of the Largest Exclusive Motor and Generator
Manufacturers in the World.

PURCHASING. published monthly by Conover-Mast Company, Publication Office, Orange, Conn. Editorial and Executive Offices, 205 East 42nd St., New York, N. Y. Entered as second-class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription, \$3.00 a year in the U. S. A. Canada and Foreign \$4.00. Volume XIV, No. 2.



IN '43
... GET
MORE

OUT OF YOUR CUTTERS

Cutters must do a greater day's work than ever before. Only a limited supply is available to serve the demands of increasing production.

You can help by using more care than usual with your cutters. By following the suggestions here to get the utmost production from the cutters you use, you can help to do your share in our united war effort.

✓ CHECK THESE POINTS

Chatter is a serious cause of poor finish, and damage to cutters. Too much tooth clearance and lack of rigidity of the machine or cutter drive are contributing factors causing chatter.

Mount cutter as close as practicable to the spindle.

With small cutters (such as end mills) be sure to run at the same surface feet as required for larger cutters.

Handle cutters carefully. Prevent damage to the cutting edges.

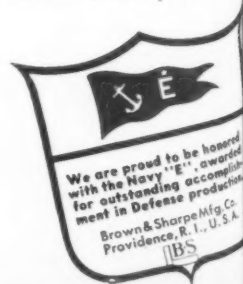
Watch cutters for wear. When dulling becomes excessive, too much metal is removed in the sharpening process. On a production job, sharpen the cutters after a predetermined number of cuts regardless of wear.

✓ **CHECK THE MACHINE** Be sure machine is heavy enough to stand the cut — and in good condition • Use the correct spindle speeds with each setup • If coolant is needed, use enough.

✓ **CHECK THE ARBOR** Use arbors of ample diameter • Insert shanks of arbors carefully in thoroughly-cleaned taper holes • Be sure ends of collars are not bruised • Provide adequate arbor support.

✓ **CHECK THE WORK** Have the work clamped and supported properly • Work not rigidly held can cause premature cutter wear or even breakage.

Help the war effort — get the utmost in productivity and service from these critically needed cutting tools.

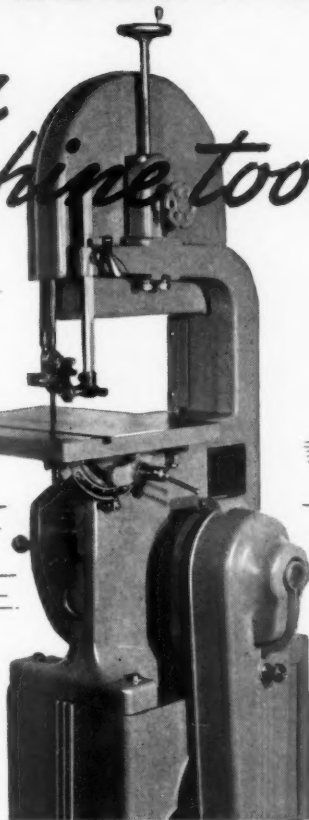
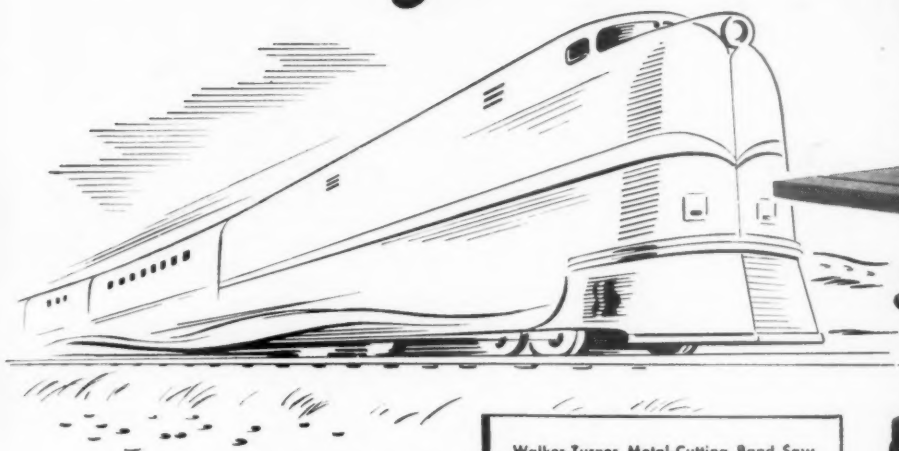


Reprints of this advertisement for use on your bulletin board furnished on request.

BROWN & SHARPE CUTTERS

WEIGHT CONSERVATION

*... for a faster train
... or a faster machine tool!*



Walker-Turner Metal-Cutting Band Saw made in 14" and 16" models. Cuts steel, non-ferrous metals, plastics, wood and other materials.

Walker-Turner Radial Drill. Drills to center of 62" circle. Head tilts to 45° right or left. Spindle speeds 160 to 8200 r.p.m.



WEIGHT conservation has been an important factor in modern design — witness the automobile and streamlined train. In machine tools, however, this idea received little attention until Walker-Turner introduced a distinctly new type in the past few years.

These simplified, compact units were designed to fit the thousands of metal-working operations for which the conventional machine tools are clearly "too much machine." Experienced engineering design, and careful selection of materials, have resulted in machine tools possessing far greater flexibility than the heavier equipment. Management quickly discovered their advantages in speeding up production, ease of handling by unskilled labor, power savings, reduced capital investment, and availability. Hundreds of thousands of Walker-Turner Machine Tools are in daily use in large and small plants, here and abroad.

WALKER-TURNER CO., INC.

1323 Berckman Street, Plainfield, N. J.



MACHINE TOOLS

DRILL PRESSES — HAND AND POWER FEED • RADIAL DRILLS
METAL-CUTTING BAND SAWS • POLISHING LATHES • FLEXIBLE SHAFT MACHINES
RADIAL CUT-OFF MACHINES FOR METAL • MOTORS • BELT & DISC SURFACERS

When writing Walker-Turner Co., Inc. please mention Purchasing

FOR YOUR PRODUCT PLANNING DIVISION

a Double Feature



a Double Feature

SEYMOUR NICKEL SILVER

ALLOY

Alloy No.

Form

COMPOSITION Approximate Percent

Copper

Zinc

Nickel

Lead

Tensile Strength
lbs. per sq. in.

Elongation
Percent in 2" min.

Rockwell Hardness
No. H & S

Density
(Specific Gravity)

Melting Point
°F

Elect Resist
I.A.C.S.

Elect Conductivity
I.A.C.S. 20°C

5%-GRADE A

10%-GRADE A

12%

12%-GRADE A

15%-GRADE B

15%-F.T.

18%-GRADE A

18%-GRADE A

18%-GRADE B

18%-GRADE B

18%-F.T.

18%-SPECIAL

25%

15%-CUPRO NICKEL

20%-CUPRO NICKEL

AVAILABLE IN:

SHEET

CIRCLES

COILS (STRIP)

WIRE

WIRE (FLAT)

ROD

16-36 B&S

16-28 B&S

16-36 B&S

4-30 B&S

8-30 B&S

2"-1/2"

Rods

up to

2"

Sheets

up to

40"

WIRE AND ROD

SHEET AND STRIP

MISCELLANEOUS

supplied Round, Half-Round, Quarter-Round, Oval, Half-Oval, Hexagon, Octagon, Square, Triangular, or Fancy - tinned or bare.
in roll finish or Patent Level. Strip tinned if desired.

SEYMOUR PHOSPHOR BRONZE

ALLOY

Alloy No.

COMPOSITION Approximate Percent

Copper

Zinc

Tin

Lead

Tensile Strength
lbs. per sq. in.

Elongation
Percent in 2" min.

Hard to Spring

Soft

Hard to Spring

Soft

HUNTING for data these days is expensive. Yet, a good understanding of the possibilities of materials being worked is necessary for best results. So, to save your time, here are the principal characteristics of two Seymour Alloys—long-time stand-bys in peace production, now vital features in war production:

SEYMOUR NICKEL SILVER — Takes any hardness from dead soft to spring temper. Excellent for deep draws and difficult spinning. Has fine grain and good corrosion resistance. Its silvery white color makes it an ideal base for plated items. Leaded, it machines freely.

SEYMOUR PHOSPHOR BRONZE — Highly resistant to corrosion, abrasion, friction and fatigue. Produces springs that withstand almost indefinite flexure. Practically indifferent to thermal variation in most ordinary uses. Has wide application in electrical design. Available leaded; also in rods for welding.

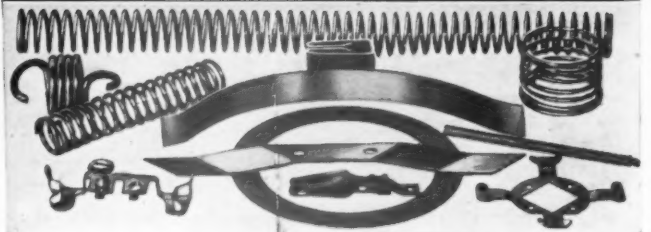
SEYMOUR

Non-Ferrous Alloys Since 1878

THE SEYMOUR MFG. CO., SEYMOUR, CONN.

When writing The Seymour Mfg. Co. please mention Purchasing

SEYMOUR PHOSPHOR BRONZE													
ALLOY	Alloy No.	COMPOSITION Approximate Percent				Tensile Strength lbs. per sq. in.		Elongation Percent in 2 in. min.		Rockwell Hardness H & S	Density or Spec. Grav.	Melting Point °F	Elect Resist I.A.C.S.
		Copper	Zinc	Tin	Lead	Hard to Spring	Soft	Hard to Spring	Soft				
GRADE A (Sheet)*	950	95.00		5.00		105,000	45,000	1.5	50				
" B (Rod)*	494	94.00		5.00	1.00	61,000	50,000		40				
" C (Sheet)*	928	91.00		8.00		112,000	55,000	3					
" D (")*	910	90.00		10.00		115,000	60,000	5	65				
PHOSPH. BRONZE (Rod)*	444	88.00	4.00	4.00	4.00	*60,000 (Small Spec Only)		20					
*Contains Phosphorus													
DITTO	Alloy No.	COMPOSITION Approximate Percent				Tensile Strength lbs. per sq. in.		Elongation Percent in 2 in. min.		Rockwell Hardness H & S	Density or Spec. Grav.	Melting Point °F	Elect Resist I.A.C.S.
		Copper	Zinc	Tin	Lead	Hard to Spring	Soft	Hard to Spring	Soft				
DITTO	950	95	30	8.86	.320	552	1920	6.1	16.5				
	494	85						6.0	16.8				
	928	98	38	8.80	.318	549		7.8	12.8				
	910	100	52	8.76	.316	546		9.4	10.6				
	444	75		8.86	.320	552	1830	8.2	12.2				
MISCELLANEOUS													
AVAILABLE IN:		Gage Range (Inclusive)		Width Range (Inclusive)		WIRE AND ROD supplied Round, Half-Round, Quarter-Round, Oval, Half-Oval, Hexagon, Octagon, Square, Triangular or Fancy - tinned or bare.							
SHEET		16-36 B&S		Rods up to 2"		SHEET AND STRIP in roll finish or Patent Level. Strip tinned if desired.							
BRIDGE PLATES		3/4"-1/2"											
CIRCLES		16-28 B&S											
COILS (STRIP)		16-36 B&S											
WIRE		4-30 B&S											
WIRE (Flat)		8-30 B&S		Sheets up to 40"									
ROD		2"-1/2"		40"									
ROD (Welding)													



Good? – They're **PERFECT!** – They've got to be!



VICTORY or defeat . . . life or death may depend upon the excellence of the equipment furnished to our fighting forces.

Rubber goods are no exception. Whether it be a synthetic rubber part for tanks or airplanes, a high altitude mask or the cushion for television insulators, *perfection* is the *one* measure for acceptance.

With tolerances reduced to a minimum, the use of synthetics in the manufacture of precision-molded rubber goods has presented many difficult technical problems. To pre-judge and guarantee performance of relatively untried compounds is no light responsibility.

We are proud that we have been able

to solve those problems satisfactorily. We are proud that, under battle-test, Acushnet products have stood up.

To our Government and our men in Service we pledge a never-ending, relentless effort to maintain those standards that have been set for us.

ACUSHNET



PROCESS COMPANY

New Bedford • Massachusetts

MAKERS OF PRECISION - MOLDED RUBBER GOODS

When writing Acushnet Process Company please mention Purchasing

MACKLIN

GRINDING WHEELS

There is a MACKLIN wheel for every grinding job. If you are having any grinding difficulty call for a MACKLIN Field Engineer—no obligation.



MACKLIN COMPANY

Manufacturers of GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.

Distributors in all principal cities

Sales Offices: — Chicago — New York — Detroit — Pittsburgh — Cleveland — Cincinnati — Milwaukee — Philadelphia

When writing Macklin Company please mention Purchasing



How a Woman's War Idea Saved a Year of Man-Hours

MRS. Bonny Smith Lewis, 21-year-old war worker at RCA Manufacturing Company's plant in Indianapolis, had an idea . . . an idea for increasing her company's production of a certain plastic part for military telephone equipment.

The flashing left on this part by the molding process was being removed by hand scraping. Mrs. Lewis' idea was that it could be removed much faster with a wire brushing wheel. The company tried her idea and adopted it.

When the War Production Board conferred awards upon workers whose ideas for improving quality or quantity of war production had proved most valuable they selected 16 men and one woman for top honors. The woman was Mrs. Bonny Smith Lewis. Her idea had saved 2925 man-hours—more than a year's work. In addition, the quality of the product was improved.

Naturally we're proud that the brushes used were made by Osborn. But our tribute here is to America's growing army of women war workers. They've tackled the biggest job they've ever faced. They are doing that job with determination, perseverance and intelligence.

In the final accounting, the contribution of American women to their country's cause will rank with the highest. *The Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland, Ohio.*



WORLD'S LARGEST MANUFACTURER
OF BRUSHES FOR INDUSTRY

GET THIS

"Know-How" Information

USE COUPON BELOW

FOR YOUR PLANT

☐ **1. DUST COLLECTION**—98% Efficiency by dust count is claimed for Dustube dust collectors, said to be easy to install, operate and maintain, along with money saving economy. Tight seals prevent leakage; bridging and clogging obviated; tubes are free from tension, thus extending cloth life; easy to inspect; tubes simple to install; few working parts to wear; minimum power for maximum, uniform air-flow. Described in 8-page folder. American Fdry. Eqpt. Co.

☐ **2. FIRE PROTECTION** — All purpose Firefoam which extinguishes both alcohol and petroleum fires, known as Alcofoam Powder, is described in four-page bulletin which contains tables of hose stream data, equipment needed, and the firefoam powder requirements. Product comes in powder form styled Alcofoam and is said to create a "smothering blanket that also snuffs out flames in ketones, esters, and similar solvents. American-LaFrance Foamite Corp.

☐ **3. RECORD STORAGE**—Manual of Record Storage Practice is the title of 16 page pamphlet listing what are described as sound recommendations for the safe and systematic storage of records, as well as a list of virtually every standard type of record with a recommended period of retention. It is free for the asking. Bankers Box Company.

☐ **4. DRILLING MACHINES**—Drilling, boring and tapping machines are nicely pre-

sented in 16pp. and cover brochure which illustrates the various units in excellent detail, along with text on physical and operating characteristics and page of specifications on drilling machines. Bryant Machinery & Engineering Co.

☐ **5. CARBIDE TOOLS** — Catalog of 30 pages shows Standard Designs in carbide tools, and large number of Standard Design tools etc., not carried in stock. Designed to facilitate ordering, the catalog gives specifications and prices, details on tolerances, and numerous illustrations of applications for individual tool types. Also includes list of 65 manufacturers offering cement carbide tipped tools and types available. Carboloy Company, Inc.

☐ **6. LOCATING & CENTERING** — Two-color 16 page booklet describes "how to do" of optical locating and centering with center scope, quickly and accurately. Center Scope Instrument Co.

☐ **7. POWER TRANSMISSION** — A 388-page War Time Manual of Mechanical Power Transmission contains descriptions, diagrams, dimensions and prices of thousands of transmission appliance, 100 pages of engineering data, suggestions on alternatives for products difficult to obtain, and a section devoted to belt conveyors for bulk materials handling. Dodge Manufacturing Corp.

☐ **8. GRINDERS** — Designed to facilitate selection and purchase of portable precision grinders, 36-page catalog lists 15 tools, accessories therefor, illustrates uses and gives principal dimensions in outline drawings; quills are illustrated with each grinder and range of work specified. The Dumore Company.

☐ **9. ELECTRICAL CONTACTS**—Booklet of 32 pages contains details of contact metals, alloys and powder metallurgy composition, together with selector chart. Wide variety of solid and composite rivets, screws, disks, bimetal and special service contacts are illustrated and listed in catalog form, along with two pages of drawings and instructions for convenient assembly. Fansteel Metallurgical Corp.

☐ **10. ACCURATE LIGHTING—DRYING**—Better Seeing and Infra-red baking, drying and preheating constitute the theme of 20-page brochure showing how good lighting and the infra-red process are speeding the production of war materials. Book presents installation photographs along with testimonial letters from users. Fostoria Pressed Steel Corp.

☐ **11. HIGH FREQUENCY HEATING** — Booklet on high frequency, electrostatic heating in the bonding, drying and heat processing of non-conducting materials such as woods, plastics, chemicals, fibrous materials and others, answers many of the questions and problems that may arise, cites potential applications and comments on past experiments. The Girdler Corp.

☐ **12. RECTIFIERS**—Copper oxide rectifiers, their construction, operation and operating characteristics in electroplating, anodizing and electrotyping, are described in new bulletin, which is profusely illustrated with photographs, charts and diagrams. Hanson-Van Winkle-Munning Co.

☐ **13. COOLANT PUMPS** — Coolant and circulating pumps are described along with performance tables, curves, cross-sections and dimensions, for pumps ranging in capacity from 5 to 150 gpm for heads up to 125 feet. It includes new line of side-wall-mounted types (also for low-submergence),

(Continued on page 12)

PURCHASING

205 EAST 42ND ST., NEW YORK, N. Y.

Please send me the "Know-How" Information checked.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

2/43

Why PREforming Conserves Steel, Makes Wire Rope Last Longer

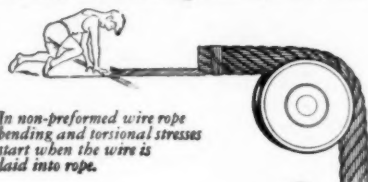
(Note: More and more wire rope users change to PREformed rope each year. During peacetime the reasons for changing from ordinary to PREformed wire rope were primarily two: the cost is lower; PREformed is easier to handle.)

Today, with our nation at war and with steel at a premium, there is another and most important reason for using PREformed. It lasts much longer under high speed, severe bending and continuous operation. PREforming thus conserves steel. It conserves workmen's time; rope changes are less frequent. It reduces the accident potential; there is no wickering to harm hands or damage sheaves.)

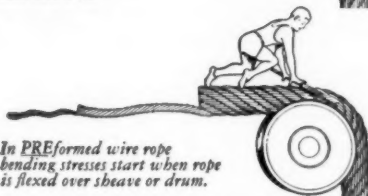
There are two kinds of wire rope. One is called Regular, or ordinary, wire rope. The other is known as PREformed.

In ordinary rope wires are held together under tension. The wires are laid into the rope by bending them to the desired shape. Bending and torsional stresses thus remain in the rope... are kept under control by seizing the ends of the rope.

If the wire breaks, it immediately wickers. If the seizing breaks, the strands



In non-preformed wire rope bending and torsional stresses start when the wire is laid into rope.



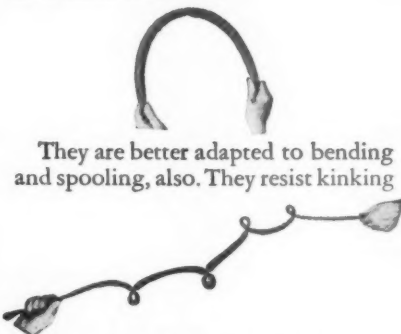
In PREformed wire rope bending stresses start when rope is flexed over sheave or drum.

and rope wire both wicker. This causes damage and delay. In PREformed wire rope, the strands and wires are pre-shaped to the exact curvature they will

take in the finished rope. Bending and torsional stresses are eliminated (except of course when the rope bends over a sheave). If a wire breaks, it does not wicker but remains relaxed, thus causing no delay or damage.

Advantages of PREforming

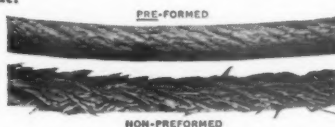
PREformed wire ropes are like shoes that have been broken in. Instead of being stiff and unwieldy, they are flexible, easier to handle.



They are better adapted to bending and spooling, also. They resist kinking

when the rope is not under load.

PREformed wire ropes are easier to handle also because broken wires lay flat.



And finally, most important, PREformed wire ropes have greater resistance to bending and fatigue. This is



another way of saying that they last much longer, do a better job when the pressure is on, as it is today in war production.

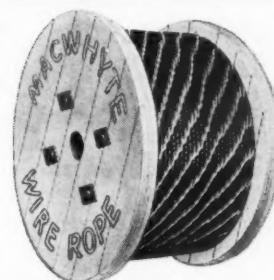
When next you need wire rope, consider seriously the purchase of PREformed wire rope. Today the job we must all do is the "best" job possible. When it comes to wire rope there is no question as to which does the "best" job. It's PREformed.

Consult with Macwhyte

Don't overlook the help that Macwhyte engineers will gladly give you on any wire rope problem. Their advice gained from many years' work on all kinds of jobs is yours for the asking. Let us know the kind of work to be done; we will tell you the rope best suited for the job.

And this we urge you to do: take extra care of your present ropes. Inspect them regularly; lubricate them often. By so doing you can make them last longer and thus aid the war effort. That's what you want; that's what your country asks of you.

This is Number 13 in a series of informative articles prepared by the Macwhyte Company to help wire rope users obtain better and longer service from ropes on the job. All articles in this series are available on request.



MONARCH Whyte Strand PRE-FORMED WIRE ROPE

... Macwhyte premier wire rope, famous for its strength, toughness, and internal lubrication.

NO. 652

MACWHYTE COMPANY

WIRE ROPE

2940 FOURTEENTH AVE.

KENOSHA, WISCONSIN



Manufacturers of MACWHYTE PREformed and Internally Lubricated Wire Rope MONARCH WHYTE STRAND Wire Rope
MACWHYTE Special Traction Elevator Cable MACWHYTE Braided Wire Rope Slings MACWHYTE Aircraft Cables and Tie-Rods

When writing Macwhyte Company please mention Purchasing

GET THIS

"Know-How" Information

USE COUPON BELOW

FOR YOUR PLANT

and horizontal type for machinery requiring coolant or circulating unit. Ingersoll-Rand Co.

☐ **14. PACKING WAR MATERIALS**—Helpful packaging information is contained in booklet built on 17 specific instances where war-goods packaging problems have been solved by special corrugated shipping boxes. Illustrates and describes designs for multiple-unit shipments, irregular shaped objects, boxes to facilitate packing, and so on. Hinde & Dauch Paper Co.

☐ **15. METAL FABRICATION**—Metal fabricating service for prime and sub-contract war production are graphically illustrated in sixteen-page brochure showing bending, punching and shearing machines and presses, welding, milling, drilling, tapping and forging machines, lathes, furnaces, shapers, planers, saws, galvanizing equipment, etc., and explains engineering and other technical services available, in two fully equipped plants. L. O. Koven & Bro., Inc.

☐ **16. WOOD PARTITIONS**—Prefabricated, movable, interchangeable wood partitions for office, cubicle, toilet and other industrial installations are described in eight-page brochure. Attractive, and complete from baseboard and moldings to hardware and glazing, partitions are said to be sturdy, rigid and long lasting. Panels may be of

wood or glass. Partitions are available in any solid color or combination color finish desired. Office partitions provide ample wiring facilities. The Mills Company.

☐ **17. ABRASIVE BELTS** — Booklet describes equipment and use of surface coated abrasive belts for producing "faster and better finishes," said to be decided time-saver for grinding, finishing or polishing a wide variety of pieces. Method consists of backstand idler unit utilizing new segment face contact wheel and surface coated abrasive belts. Present lathe or set up equipment can be used. Minnesota Mining & Mfg. Co.

☐ **18. ADHESIVES**—Four-page bulletin describes new line of vegetable base adhesives designed for diversified range of applications, which are said to provide range and flexibility of action similar to that of animal base adhesives. Can be machine or brush applied, diluted or used as received, and are said to assure permanence without shrinkage or warping without sacrifice of adhesive strength. Made of low-cost, non-critical materials. Paisley Products, Inc.

☐ **19. SURFACING SMALL PARTS** — Belt surfacing of small metal or plastics parts for "quick results" is explained in 24-page booklet pointing the way to save time, money and manpower, by text and illustrations. Method is said to eliminate duplicate

handling, dust, hand filing, to save on jig and fixture costs, and provide other benefits. Advantages of use in other departments aside from production department also explained. Porter-Cable Machine Co.

☐ **20. COPPER & BRASS HANDBOOK** — Sixth Edition of Revere Weights and Data Handbook includes new section giving technical and mill definitions and illustrations of terms used in copper and brass industry. Chemical and physical properties revised to date, and formulae included for calculating weights. Revere Copper & Brass, Inc.

☐ **21. NATIONAL EMERGENCY STEELS**—Simplified data booklet on NE steels, deals with their selection and heat treatment, "minus curves, graphs and technical wordage." Jominy End Quench Hardenability test, said to be simplest and quickest way of determining hardenability, is explained step by step,—with tables converting results into physical property data. Lists suggested NE substitutes for SAE grades. J. T. Ryerson & Son.

☐ **22. INDUSTRIAL SAFETY** — Complete line of safety clothing and equipment for practically all industrial uses, first aid kits and supplies, fire extinguishing units, ladder shoes, magnifying shields, shin and foot guards, protective creams, and wide variety of products, are described in 64-page catalog. The Safety Clothing & Equipment Co.

☐ **23. AUDIBLE SIGNALS**—Electric sentinels in the form of bells, horns, buzzers, and electric air-blast signals, for use on industrial machines, processing and operating equipment and other uses where good signalling is essential, are described and illustrated in new Buyer's Book of Electrical Signals, which also contains guide to proper selection. Schwarze Electric Co.

☐ **24. ELECTRICAL CONTROL DEVICES**—Catalog contains details of compact devices including circuit breakers, switches, relays, contractors, push buttons, limit switches and special purpose devices for 12-24 volts, DC, applications. Designed for aircraft and tank use, devices have wide range of applications. Square D Co.

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ARISTOLOY COLD DRAWN STEELS

*for speed
in precision
war production*



Cold Drawn Steels have the vital wartime job of keeping fast automatic production machines operating continuously at peak loads. The uniform surface and close tolerance of Aristoloy Cold Drawn Steels assure smooth machining with longer tool life and uninterrupted production.



**COPPERWELD STEEL COMPANY
WARREN, OHIO**

TO BUILD MORE... BETTER... FASTER

Carbon Tool Steels • Aircraft Quality Steels • Nitralloy Steels • Alloy Tool Steels • Stainless Steels • Bearing Quality Steels • Cold Drawn Steels

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☐ **25. INTER-COMMUNICATION** — Eight-page catalog explains All-Master and other types of inter-communication and paging systems. New model is Super-Chief which enables number of stations to hold private conference, and is available in systems up to 80 stations. "Uni-Trans" feature claimed to be effective for letter dictation and recording of conferences. Talk-A-Phone Mfg. Co.

☐ **26. GRINDERS-BUFFERS** — Ball-bearing motor in head, heavy duty, long shaft grinders (12" and 14" wheel); heavy duty bench grinders with oversize ball bearings, heavy shafts and wide wheels; heavy duty, motor in head grinders, standard shaft extension 12" x 14" wheel, large ball-bearings, dust-proof, totally enclosed motor and oversize shaft; 10-inch pedestal ball-bearing grinder; and, motor-in head heavy duty buffers with enclosed motor and long end bells, are described in four-page bulletin. Valley Electric Corp.

☐ **27. RECORD KEEPING** — Booklet describes method of visible applications to record-keeping problems now existing and expected to arise in Allocation and Material Control, Purchases and Stores, Personnel, etc., as conditions change. Explains use of system with machine posting as means of handling volume record-keeping, and cites test cases. Visible Index Corp.

☐ **28. D-C DRIVE CONTROL** — Booklet of 14 pages describes how Rototrol increases

speed range, keeps speed of D-C motor constant regardless of load variations, makes accurate or very close speed regulation possible, provides uniform acceleration and deceleration, and maintains constant horse-power and uniform tension. Applications described and illustrated. Westinghouse Electric & Mfg. Co.

☐ **29. STANDARDIZED SWITCHGEAR** — Specifications for standardized basic units and information to be furnished with orders are included in brochure profusely illustrated with pictures and diagrams, presenting facts on Unitized Metal-Clad Switchgear, designed to eliminate special engineering and permit complete standardization of ordering and manufacturing procedures and stocking of parts and materials. Westinghouse Electric & Mfg. Co.

☐ **30. ELECTRONIC CONTROL for resistance welding** — Forty-page brochure by text, picture and schematic illustrations, explains the simplicity and definite qualities of resistance welding control by electronic tubes; also, heat control, synchronous control and other pertinent matter along with application data, and fundamentals of electronic circuits. Westinghouse Electric & Mfg. Co.

☐ **31. METAL CLEANER** — Booklet describes water soluble, dry, free-flowing neutral sodium salt of selected rosins, for metal cleaning, which produces rapid

wetting of surfaces, emulsifies oils, greases, and other types of dirt removable with alkaline cleaners. Makes possible a replacement of solvent baths by alkaline baths. Hercules Power Company.

☐ **32. GUIDE TO PLASTICS** — Sixteen page brochure, profusely illustrated, details uses of various plastics in the phenol-formaldehyde, vinyl acetal, cellulose nitrate, cellulose acetate and polystyrene groups, and outlines their physical and chemical properties. Monsanto Chemical Company.

☐ **33. MOUTH & TAPER - ANNEALING MACHINE** — A picture and description of this machine are given in a four page folder. The use of steel for cartridge cases brought its development. Machine is said to quickly and economically produce a uniform anneal at and near the mouth to facilitate tapering and crimping operations. Morrison Engineering Corp.

☐ **34. GRAPHITE LUBRICATION** — This 28 page handbook explains the work which graphite performs and has an indexed list of applications which will be found helpful in keeping machines at peak performance. Nassau Laboratories.

☐ **35. TAP DRILL SIZES** — A handy 5" x 3" card gives in table form tap drill sizes according to National Screw Thread Commission Standard based on 75% full thread as well as decimal equivalents of wire, letter and fractional size drills. Also put out in neat pocket folder covering is a small gauge for maintaining good drill points. National Twist Drill & Tool Co.

☐ **36. WELDING EQUIPMENT** — Designed for welding of aluminum alloys, this equipment is described in a four page bulletin. The line includes both rocker arm and pedestal type welders. A feature of the latter is a built-in refrigerating unit for electrode refrigeration. Progressive Welder Co.

☐ **37. RUBBER BELTING** — A list of essential considerations in the installation and

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2/43

Just out— The Book of the Year

on faster, better filing production — through
proper use, care and selection of files



AN AID to America's war effort! A help to industrial men and managers! A Nicholson contribution toward greater production speed and efficiency, greater conservation of time and materials—and longer file life!

"FILE PHILOSOPHY" has been prepared with infinite care. It reflects the experience of 79 years of industrial filing research, file designing and quality file manufacture. It contains the best portions of fifteen editions of a previous file treatise printed under the same title. To it has been added much of the contents of a supplemental Nicholson book, "A File for Every Purpose." Still more has been added to cover today's advances in shop practices

and specialization, and new developments in materials and products.

Easy to Understand

"FILE PHILOSOPHY" is a simple discourse—as understandable to the bench-working mechanic as to the production head. It is an excellent "textbook" for the shop-school instructor. It is particularly helpful to men who have the responsibility of providing *The right file for the job*—for today the Special Purpose file has an important place on the production front. (There are many such files in the Nicholson and Black Diamond lines.)

48 INTERESTING, PROFUSELY ILLUSTRATED PAGES

How a quality file is born • A bit of file history • File terminology • Mill files • Machinists' files • Rasps • Swiss Pattern files • Curved Tooth files • How to get the most out of files—through proper use, care and selection • Draw filing and Lathe filing • Special Purpose files: for rough castings, die castings, stainless steel, aluminum, brass, lead, plastics, smooth finishing on soft metals • Saw files and Saw filing • Precision filing • Sharpening tools and implements.

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—by letter or
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Please send me a free copy of "File Philosophy."

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NICHOLSON FILE CO.

28 ACORN ST., PROVIDENCE, R. I., U. S. A.

(Also Canadian Plant, Port Hope, Ont.)

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operation of conveyor and elevator belting, transmission belting, "V" belting, and hose is considered in this 31 page booklet. The handbook is a wealth of information for industrial users of mechanical rubber goods and considers conservation of rubber through proper care of equipment. Republic Rubber.

☐ **38. CENTRIFUGAL COMPRESSOR** — Outstanding features of this centrifugal compressor are trouble free service, constant pressure, power savings and practically no need of attention. Performance charts as well as photographs of the compressor are given in a 20 page catalog. The compressor is exceptionally well fitted to industrial furnace, conveying and pneumatic tube work. B. F. Sturtevant Co.

☐ **39. DEHUMIDIFIERS** — Two new units made of non-essential materials, and chemical powders for eliminating damp air, are described in four page descriptive folder. One unit is designed for warehouse, factory, and general store use; the other for household, store or office use. Tamms Silica Co.

☐ **40. FOOD CARRIERS** — Hot foods and liquids can be kept palatably hot for hours even when transported miles in outdoor winter temperatures by use of bulk carrier containers described and illustrated on

one page. The carriers are especially adapted to large industrial war-production plants where food must be conveyed a great distance. Vacuum Can Co.

☐ **41. SAFETY AWARDS** — This circular of six pages features stock plaques, trophies and awards for safety. First Aid, and no accident records. Emblems of all description are illustrated in the circular. Williams Jewelry & Manufacturing Co.

☐ **42. FLUORESCENT LIGHTING FIXTURES** — A new catalog of 30 pages illustrates more than 30 models, giving specifications, and in addition provides a list of recommended minimum standards of illumination, instructions on how to plan a fluorescent installation and much general engineering and maintenance information. The list of minimum standards is indexed both by industries and operations.sylvania Electric Products Co.

☐ **43. PRODUCTION CONTROL BOARDS** — Both standard and special types of visual control equipment for such production factors as Machine Loading Schedules, Order Progress, Raw Material and Shortages, as used in war-material plants, are illustrated and their operation explained in a 12-page binder. Attention is called to the fact that, by the use of symbols, code

letters or other signs the information registered can be kept confidential. The Tablet & Ticket Co.

☐ **44. LAMINATED PLASTICS** — Vulcanized fibre and phenol fibre for use for electrical insulation, for radio, for electronics, for aircraft and for silent gears are the topic of a new 56-page handbook for engineers and designers. Included in the book are tables and other data of help in connection with the selection, fabrication and application of the materials. Taylor Fibre Co.

☐ **45. ELECTROPLATING EQUIPMENT** — A 4-page bulletin features a standardized unit for plating current generation, to deliver a definite ampere output and be usable for either barrel or still tank plating. The unit is compact—floor space 22" x 32"—requires no foundation, and delivers 720 amp. at 12 volts, 1440 amp. at 6 volts. The Udylite Corporation.

☐ **46. STEAM GENERATORS** — Featured in a carefully prepared engineering bulletin under the phrase "packaged steam" is a line of vapor generators, including portable equipment. The items illustrated in photographs and schematic drawings were selected for their suitability to industrial, aviation, refinery and other industrial uses. The book closes with two pages of engineering information on steam and refrigeration. Vapor Car Heating Co.

☐ **47. HYDRAULIC RAMS** — Published by a manufacturer of hydraulic machinery and equipment, this 12-page handbook is devoted wholly to helpful engineering information for hydraulic engineers—capacities; water-discharges; pipe data; conversion tables; useful hydraulic formulas, etc. Watson-Stillman Co.

☐ **48. EXTRUDED PLASTICS** — A pocket-size pamphlet digests the replacement possibilities of extruded plastics for rubber, metal, glass and wood, provides a tabulation of general properties of six types and illustrates the stock shapes and dimensions in which they are available from the manufacturer. R. D. Werner Co., Inc.

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In the fight for production
SKILSAW TOOLS
HAVE THE SPEED THAT
MEANS *Quicker Victory!*

SKILSAW DRILLS—Speed up all drilling from lightest lead holes for screws to heaviest boring and reaming in wood or steel. 23 POWERFUL MODELS.

SKILSAWS—For faster sawing in maintenance and remodeling work, crating and uncrating and metal-cutting in production. 9 POWERFUL MODELS.

SKILSAW DISC SANDERS—Grind, file, sand, buff on all surfaces. Used with grinding wheels, sanding discs, wire brushes, etc. 6 POWERFUL MODELS.

SKILSAW BELT SANDERS—For faster "final-finishing" on wood, metal and compositions. Belt widths: 2 1/4, 3 and 4 1/2 in. 4 POWERFUL MODELS.

Tanks, planes, ships, guns . . . SKILSAW TOOLS are building them quicker because SKILSAW TOOLS are *designed for speed!* They're lighter, more compact for easier handling everywhere . . . more powerful for faster work on toughest jobs . . . more rugged for top-speed, trouble-free service on stiffest 3-shift schedules. It's no wonder SKILSAW TOOLS are acknowledged leaders on production's battle fronts.

Want to see for yourself how much time these SKILSAW TOOLS can save in your own plant? Just ask your distributor to demonstrate them for you . . . *today!*

SKILSAW, INC., 4761 Winnemac Ave., Chicago

New York • Boston • Buffalo • Philadelphia • Cleveland • Detroit
 Indianapolis • St. Louis • Kansas City • Atlanta • New Orleans
 Dallas • Los Angeles • Oakland • Portland • Seattle • Toronto, Canada

SKILSAW PORTABLE ELECTRIC **TOOLS**
 ★ *MAKE AMERICA'S HANDS MORE PRODUCTIVE* ★

When writing Skilsaw, Inc. please mention Purchasing



J. L. Dugan (2nd from left) salesman, Southern Tier Electric Supply Co., Inc., Elmira, N. Y., G-E distributor, is helping to select materials for rush war job and to plan their delivery. In the photograph left to right: F. Farley, shipping and receiving clerk; Mr. Dugan; Robert O'Connor, counterman; H. P. "Hank" Brill, manager.



J. L. Vanneman (left), salesman, General Electric Supply Corporation, Denver, Colo., is here discussing circuit breakers and going over building plans with Dudley Elkins, Sr., of The El Paso Electric Co., Colorado Springs, Colo. Mr. Vanneman supplied necessary materials for the job and is supplying maintenance materials.



G. E. White, sales manager, Central Electric Supply Company, Battle Creek, Mich., G-E distributor, among other services, helps local plant engineers and maintenance men to keep their wiring systems in first class condition by supplying materials and helpful service as needed.

T. E. Kuryla (left), salesman, General Electric Supply Corporation, Erie, Pa., is shown in the photograph helping H. W. Alexander, manager of the Surgical Lighting Division of the American Sterilizer Co., Erie to take off wiring devices, wire and conduit fittings needed for new germicidal units. Note unit on desk.



Call the G-E WIRING MATERIALS DISTRIBUTOR

*Near You for
War Purpose Wiring Supplies*

General Electric Wiring Materials Distributors are located at more than 175 key points in the United States. One of them is near you ready to supply suitable material for war jobs. This distributor wants to cooperate with you in every way possible to aid the war effort.

Ask a representative of the General Electric Wiring Materials Distributor near you to call. You'll like the friendly service that he will give you. His long experience enables him to offer suggestions that will help you in maintaining wiring systems . . . in converting wiring to war purposes . . . in planning new wiring.

The line of conduits, boxes and fittings, wires and cables and wiring devices handled by the General Electric Wiring Materials Distributor near you is large. You are sure to find materials suitable for your needs. Deliveries are expedited by the short distance between this distributor and you.

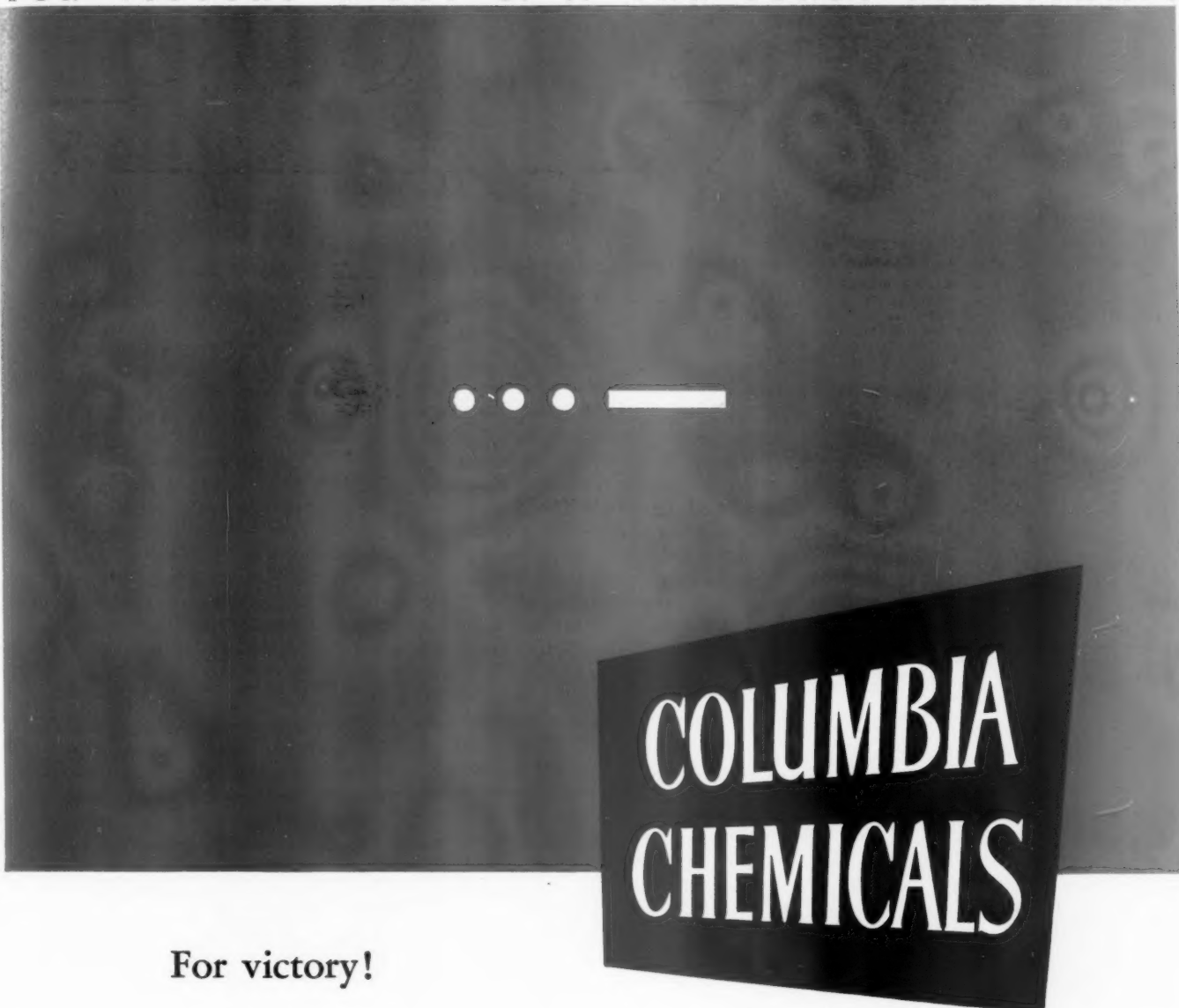
FOR G-E WIRING MATERIALS
Call your G-E Wiring Materials Distributor about conduit, wire and cable, and wiring devices. He is eager to serve you.



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FOR VICTORY ★ BUY U. S. WAR BONDS AND STAMPS



COLUMBIA CHEMICALS

For victory!

Victory—complete victory, at the earliest possible moment! Nothing short of that will satisfy American Industry.

That's why the tempo of industrial production has increased so rapidly. That's why new production records are so commonplace today they scarcely merit a moment's attention. That's why supplies and equipment for our armed forces are pouring out of our factories in a veritable deluge—a deluge which will inevitably overwhelm our enemies.

In this war production program, Columbia Chemicals

are playing a vitally important role, helping to increase production, helping to make sure that finished products will provide the dependable performance so necessary in all types of war equipment.

If the pressure of expanded wartime schedules has created a production problem in your plant, involving the use of chemicals such as those listed here, why not let us discuss it with you on the chance that we might be able to make a suggestion or two which will be of benefit.

COLUMBIA Essential Industrial CHEMICALS

SODA ASH • CAUSTIC SODA • SODIUM BICARBONATE • LIQUID CHLORINE • SILENE* • CALCIUM CHLORIDE
SODA BRIQUETTES • MODIFIED SODAS • CAUSTIC ASH • PHOSFLAKE • CALCENE** • CALCIUM HYPOCHLORITE

*Precipitated Calcium Silicate

**Precipitated Calcium Carbonate

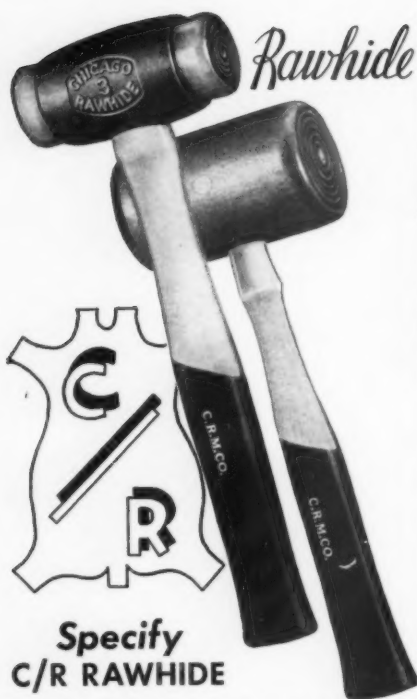
PITTSBURGH PLATE GLASS COMPANY

COLUMBIA CHEMICAL DIVISION

GRANT BUILDING • PITTSBURGH, PA.

CHICAGO • BOSTON • ST. LOUIS • PITTSBURGH • NEW YORK • CINCINNATI • CLEVELAND • PHILADELPHIA • MINNEAPOLIS • CHARLOTTE

When writing Pittsburgh Plate Glass Company please mention Purchasing



C/R Hammers and Mallets go along in the tool kits of most war planes because their coiled Rawhide faces take the damaging crash out of forceful blows—get work done without battering, denting or marring. They come in sizes and weights for all assembly, servicing and dismantling operations—are standard tools with die setters and machinery builders and are universally used for “pounding-in” motor winding because they will not injure the most delicate insulation.



They strike accurately, for they are not only accurately balanced with shaped handles but hold their true striking face—never chip, smear, crumble or erase. They are less fatiguing because they do not bounce or recoil.



While they cost more than many types of mallets they far outlast them and are not only the best but cheapest “soft” hammers in the long run. They are sold by leading supply houses.

Write for Catalog Sheets

CHICAGO Rawhide MFG. CO.
1294 ELSTON AVE. ★ CHICAGO, ILLINOIS

F.O.B. *Philosophy of buying*

THE OWI and WPB have gone alphabetical in a big way with the publication, shortly after the Christmas shopping season of an “Automobile to Zoot Suit” compilation of the shopping list casualties of 1942—familiar ‘peace-time’ consumer items that are no longer available at all, or have been severely curtailed, or limited to a few standard sizes and designs. The announcement strikes a cheerful note by remarking that though further casualties will be in store for 1943, Americans are assured of enough of the basic things they really need.

A is for automobiles, aluminum, and alcohol.

B is for bristles in household brushes, bobby pins, bicycles, banana splits, and butter.

C is for chocolate, coffee, cream, corsets, cellophane, clocks, cosmetics and their fantastic containers, chlorine, cameras, cuffs, and Vitamin C.

D is for dyes, dog foods, and dentists’ drills.

E is for electrical appliances.

F is for feathers, flaps on pockets, flash bulbs, fishing tackle, furniture (metal), and canned fish.

G is for gasoline and golf equipment.

H is for houses, hems, and hosiery.

I is for iron gadgets, ice cream, and ice cream molds.

J is for jackets, jars, and jute.

K is for knives and kapok.

L is for lawn mowers, lamps, and frilly lingerie.

M is for metal goods, mattresses, matches, myrrh, and meat.

N is for notions, naphtha, and nylon.

O is for oil, optical goods, and olive drab for civilian fashions.

P is for plastics, printed fabrics, perambulators, mechanical pens and pencils, and paint ingredients.

Q is for quinine.

R is for rubber, rugs, roller skates, and razor blades.

S is for silk, sugar, shellac, sauerkraut, wide skirts, and shoes.

T is for tin, typewriters, and metal toys.

U is for utensils of aluminum, iron, enamel and zinc.

V is for vacuum bottles, vanity cases, venetian blinds, and vases.

W is for wool products, wall-paper, and watches.

X is for xylophones and other musical instruments.

Y is for yachts, yarn, and yellow iron oxide.

Z is for zippers and zoot suits.

In a post-script sort of paragraph, the announcement concludes: “With 1942’s war restrictions affecting most shopping habits and preferences, two sentimental ‘necessities’ still remain more or less exempt. Uncle Sam is indulgent about wedding dresses and baby clothes.”

ADD to your vocabulary of war-time terms the word “Metalurgency”—coined by the Army Ordnance Department to describe the fact that alloy steels containing nickel, chromium, vanadium, molybdenum, manganese, and silicon, normally representing only 7% of our total steel requirement now amount to some 20% of the total, and that we are dependent on imports for an appreciable percentage of our supply of all these elements except molybdenum. Army Ordnance is particularly interested in this problem, being the largest single steel user, and absorbing in its production about 65% of the war tonnage. Metallurgists have grappled with the Metalurgency, and Ordnance has rather a notable record to report. On a part of the 1942-1943 production, ways and means have been devised to save 72,103,055 pounds of nickel, 18,313,452 pounds of chromium, 1,647,870 pounds of vanadium, while increasing the use of molybdenum by only 1,131,216 pounds.

CLOSED season on deer in Massachusetts is open season for the boys and girls in the state institutions. We see by the papers that Major George Cronin, resourceful Purchasing Agent for the Commonwealth, has taken steps to alleviate the meat shortage by decreeing that all deer accidentally

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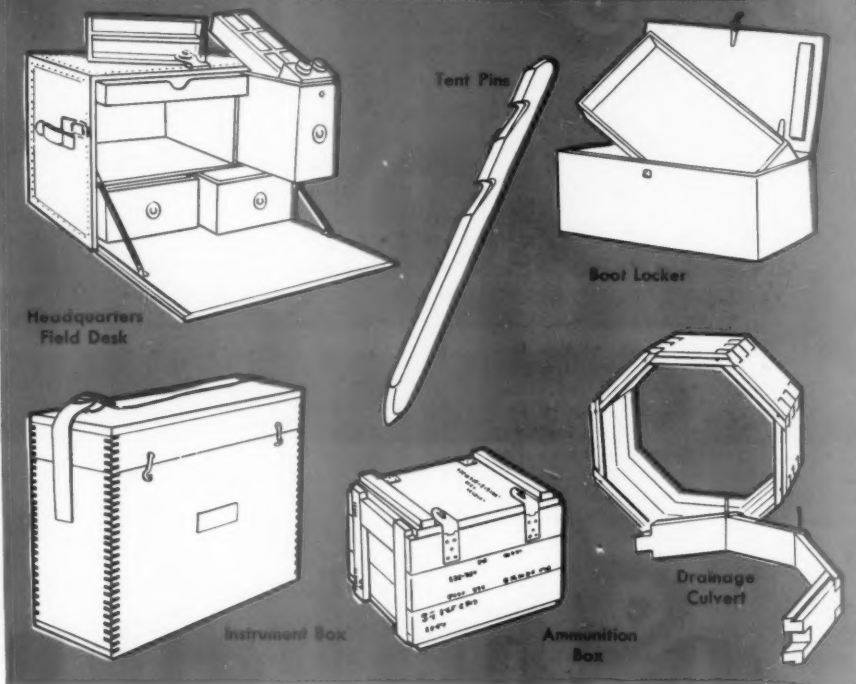
killed on the highways shall be promptly turned over to the commissary department. Then just as everyone was getting set for a juicy venison steak, the kill-joy OPA practically ruled all cars off the road.

THE Voice of Experience (as expressed by Duluth's Safety Commissioner R. F. Peterson at a City Council meeting devoted to checking invoices): "The only way to stop headaches in bills is to go over the requisitions before the purchases are made—not over the bills after the obligations are incurred." Duluth's charter is wide open on purchases under \$100, but Mayor Hatch and Finance Commissioner Lund promise that appropriate resolutions will be placed before the Council promptly.

POST-WAR priorities are forecast in OPA's "Buy-in-Advance" program, which has the "whole-hearted and unqualified" endorsement of Mr. Henderson. The proposal, in brief, goes like this: If you plan to buy an automobile, refrigerator, piano, oil burner, or automatic stoker after the war, when such things are again being made, you may start the "dollar down and a dollar a week" process in advance, for which you receive (1) a certificate to be used as the down payment on the equipment when it becomes available, and (2) a priority based on the month in which payments were started, insuring preferred attention during the anticipated post-war scramble when a lot of other citizens will also presumably be eager to buy automobiles, refrigerators, pianos, oil burners, and automatic stokers. In addition to Mr. Henderson's endorsement, the principle has been advocated by Henry J. Kaiser, who may be looking for customers for ships after the war, and by Adolph Shickelgruber, who actually sold several thousand of his proposed "Volkswagen" automobiles on the prepaid installment plan, but is rather dubious about the prospects of ever getting into production.

THE customarily staid and dignified Associated Press indulges in a bit of innocent double-talk in its recent report that "Pretzel prices took an upward twist today." OPA had just authorized wholesalers and retailers to pass along to the consumer an additional cent a pound.

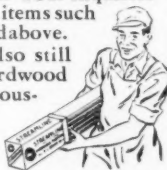
WANTED QUANTITY ORDERS FOR WAR PRODUCTS MADE OF WOOD!



ABOVE are six of the hundreds of wartime wood products E. L. Bruce Company is fully equipped to manufacture on a low-cost, quantity basis. We are specializing in nailed boxes and solid or glued-up wood parts (either completely or partially machined). Our company offers buyers of wood products for war use these advantages: (1) Seven modern plants, (2) Complete woodworking machinery, (3) Over 3,000 skilled workmen, (4) Broad experience and fast, dependable service.

TO THE LUMBER TRADE

To help our nation's war effort, we have converted our production very extensively to wood products for war purposes. Your inquiries are invited on any items such as those illustrated above. (Note: We are also still manufacturing hardwood flooring for war housing and other permissible construction).



Advisory Service on Wood Products— This technical and engineering service is offered by Bruce under direction of one of the country's leading wood experts. It can help solve problems involving the use of wood, and is of particular interest to those planning to substitute wood for metals or other materials.

Let us know what you use or plan to use in the way of wood products for war purposes. Just send a description, blueprint or sample of items needed. Or write for further information.

E. L. BRUCE CO.

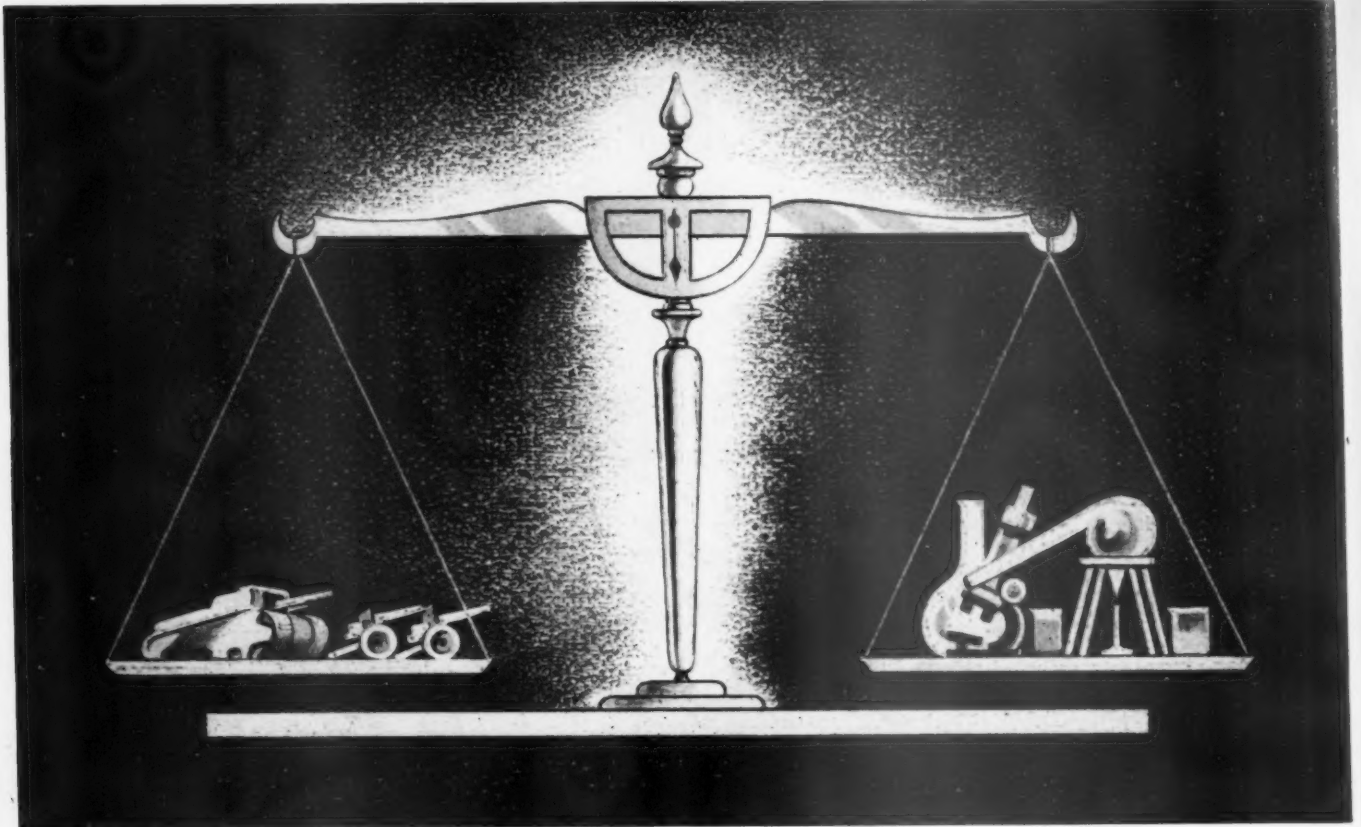
1522 N. Thomas Street • Memphis, Tenn.



BRUCE *Specializing*
IN WOOD PRODUCTS

MANUFACTURERS OF BRUCE STREAMLINE FLOORING

When writing E. L. Bruce Co. please mention Purchasing



In the balance . . .

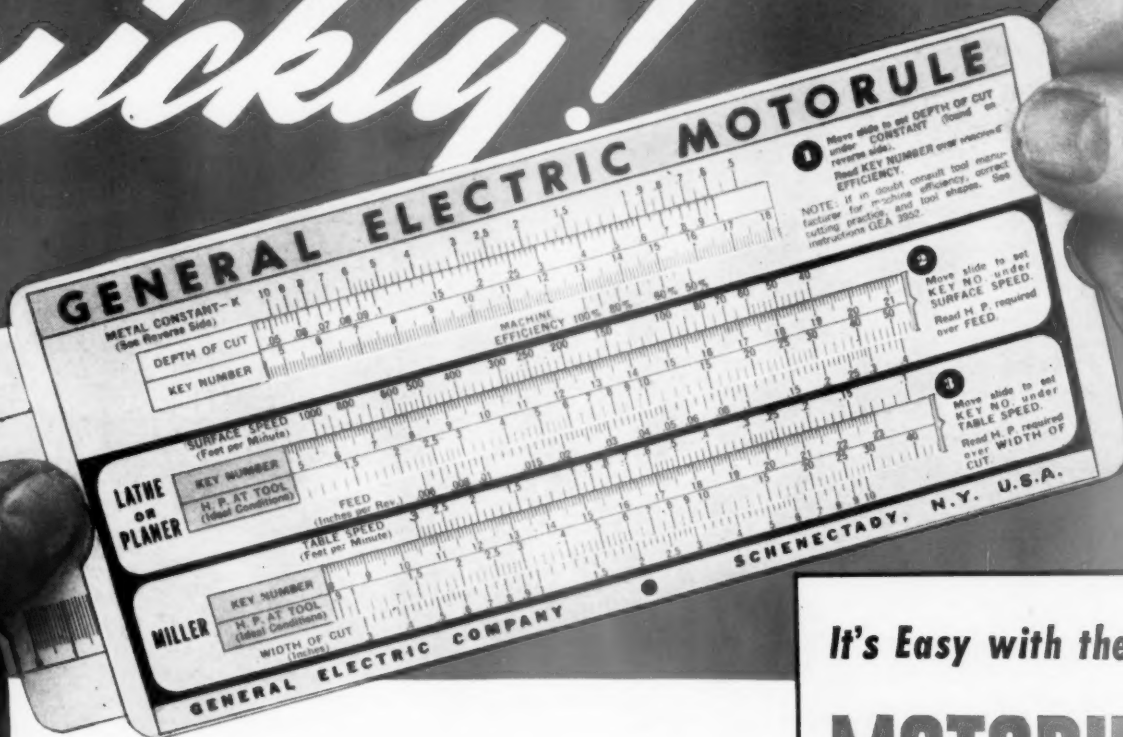
Chemical engineering is producing literally hundreds of amazing new products and processes as its contribution to the winning of the war. Just what some of these developments are you may not know until the war is over . . . for they are military secrets. But, once the war is won, you will feel their full impact in your plant, your product and your sales. It is important that you keep pace with this technological advance. For example: finishing. Probably no one sales point is

more important to your product, or more vital to your sales. And certainly no one point has, during the past year, received more expert attention. It is our business to discover better ways to finish products . . . to cut finishing time, to lower finishing costs, to improve appearance and utility, and by these means to increase sales and profits for your product. Your inquiry will incur no obligation. Address The Stanley Chemical Company, East Berlin, Connecticut.

Stanley Chemical

When writing The Stanley Chemical Company please mention Purchasing

FIND METAL-CUTTING HORSEPOWER Quickly!



This newly developed load calculator makes it easy to figure the motor horsepower required for metal-cutting operations when the recommendations of the machine builder are unavailable. Its advantages? You can avoid *undermotoring* and save yourself production delays; you can avoid *overmotoring* and save the nation vitally needed steel, copper, and aluminum.

The G-E MOTORULE is accurate for a wide variety of cutting operations on lathes, drills, milling machines, and planers. It works on a wide range of materials, because you start from a convenient table of constants for the material being cut.

The results of many years of work by metal-cutting authorities were used by G-E engineers as a basis for the MOTORULE. The formulas were checked against actual load tests, and leading machine-tool builders were consulted.

The MOTORULE will help you in making sure of adequate motor capacity on machines being put to new war work, and in selecting motors for machines formerly driven from line shafting. To get your MOTORULE, just get in touch with your G-E Motor Representative. Or, if you wish, mail the coupon direct to General Electric, Schenectady, N. Y.

It's Easy with the G-E

MOTORULE*

First you refer to a convenient table of constants, printed on each rule, choosing the constant for the particular type of metal to be cut. Then by setting the scales to the known cutting speed, feed, and cut, you arrive at the cutting power required on the basis of ideal tool and machine conditions. Complete instructions are furnished with each MOTORULE.

*The MOTORULE is not intended to supplant the instructions of machine builders as to the power requirements of their machines. It is offered to fill the gap when these recommendations are unavailable.

SPECIFY **TRI/CLAD** MOTORS

Standard G-E Motors Are Generally Available without Delay for War Jobs



The Heavy "E", for Excellence, has been awarded to 92,780 General Electric employees in six plants manufacturing naval equipment.

GENERAL ELECTRIC

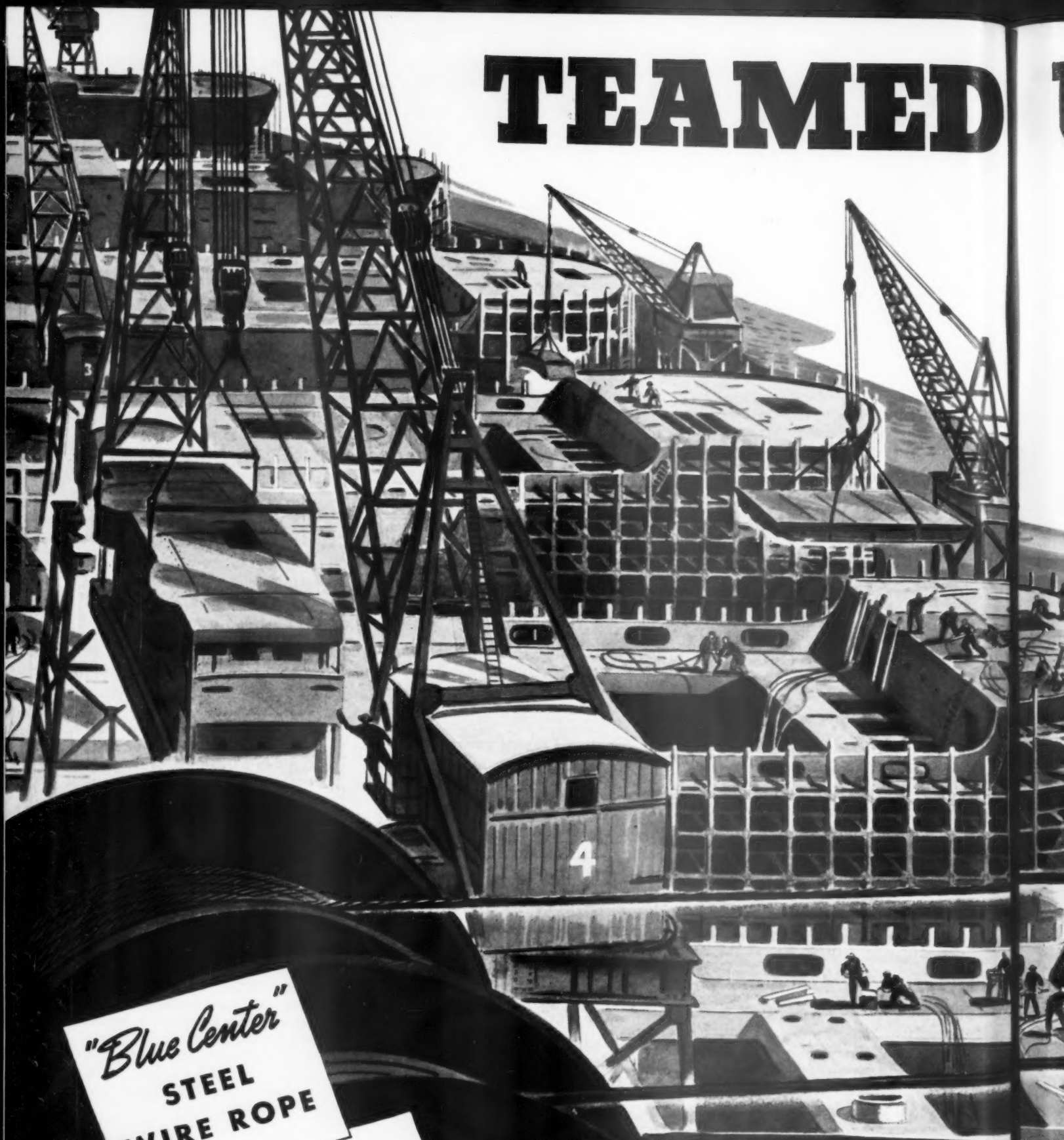


General Electric Co., Sec. Q 750-159
Schenectady, N. Y.

- ☐ Please send your MOTOR FITNESS MANUAL, GED-1017.
- ☐ Please send me a G-E MOTORULE, with full instructions and leaflet giving the principles on which it is based.

Name.....
Title.....
Company.....
Street.....
City..... State.....

TEAMED



"Blue Center"
STEEL
WIRE ROPE

Electrical
WIRE
AND CABLE



ROEBLING

UP to float Victory ships *Faster!*

LOOK AT THE FRONTS America is fighting on... and you'll see why more than a million tons of new ships a month *is not enough!* Watch a three-story prefabricated deck house being swung into place... and you'll see why the 8-day keel-to-launching record *will be broken again!*

For this breath-taking and Axis-shaking production, we can thank American teamwork. Teamwork of ship-builders and their three-quarter million workers... teamwork of far-sighted organization and tradition-shattering techniques. Yes, and teamwork of many products, too—playing a coordinated part.

Roebling "Blue Center" Steel Wire Rope and Roebling Electrical Wire and Cable... miles and miles of them are teamed up, working side by side.

On the ways... Wire Rope rigs the whirley cranes that position 75 tons and 10,000 man-hours of steel work with one sweep of the booms... Electrical Cable feeds the welding arc that sew up steel sheets into stiffeners and bulkheads and bow sections.

At launchings... Wire Rope holds the reining lines that guide these ships down the ways... Electrical Wire

passes along the word "go" from keel greaser to dock foreman to yard superintendent.

And in the ships themselves... Wire Ropes on topping lifts and cargo falls and slings help these cargo ships pay off at distant ports... Electrical Wires turn the motors and light the quarters and give voice to the radio shack.

It took *new skills* to build these ships... and to draw and spin and lay their wire rope sinews... skills that are going into today's "Blue Center" to make it meet conditions unfailingly wherever wire rope has a job to do.

It took *new knowledge* of wartime service conditions... and of building toughness into conductors and insulations and coverings... knowledge that is passed along to you in every inch of Roebling Electrical Wire and Cable.

And the nearest Roebling office or Roebling Distributor is ready to get this *Teamwork* on the job for you. Bringing the experience of putting wire to work in a hundred industries... and the results of learning every day to make Roebling Wire Products better than ever before.

JOHN A. ROEBLING'S SONS COMPANY

TRENTON, NEW JERSEY Branches and Warehouses in Principal Cities



Pacemaker in Wire Products

Which of These ... SPECIFICATION FINISHES Do YOU Need?

Quick Drying Metal Primer

Lacquer

Paints for Ammunition

Clear Phenol Baking Varnish

Ammunition Lacquer Enamel

Spar Water Resisting Varnish

General Purpose Lacquer Enamels

Quick Drying Camouflage Enamel

Dope, Cellulose Acetate, Clear

Aluminum Mixing Varnish

Lacquers for Shells, Bombs, Grenades, etc.

Paint, Cavity — for Torpedoes

DON'T let the problem of securing the proper Government Specification Finish hold up your war production jobs. You can depend upon our chemists, with their broad experience in formulating Government Specification Finishes for many war products, to give you the finish you must have for the materials or equipment you are producing for the Army, Navy, Air Corps or Marine Corps.

Our many years of pioneering development work in producing exclusive varnishes and lacquers for Permite Ready-Mixed Aluminum Paints, and the facilities of our modern plant, are also at your service.

Clear and colored lacquers, zinc chromate primers, enamels, mixing varnishes, camouflage paints, rust inhibitors — custom-built to your needs to meet Government Specifications — are included in the Permite Line. We also supply Permite Aluminum Paints on WPB allocation.

Quotations on any finishing needs submitted promptly upon request.

ALUMINUM INDUSTRIES, Inc.

CINCINNATI, OHIO



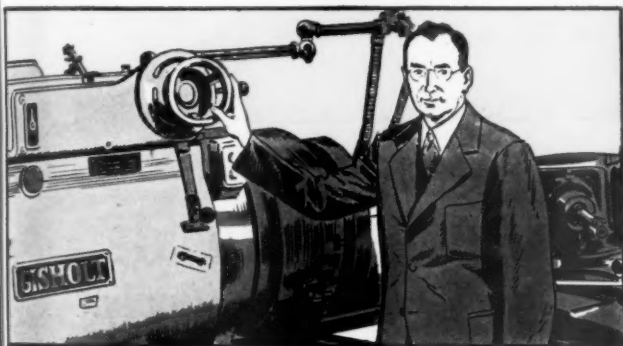
PERMITE *Industrial* FINISHES

When writing Aluminum Industries, Inc. please mention Purchasing

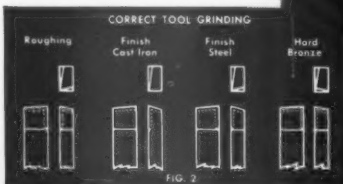
"Correct cutting speed is of the utmost importance in metal turning"

says GEORGE M. CLASS
Vice-President in Charge of Engineering
GISHOLT MACHINE COMPANY
Madison, Wisconsin

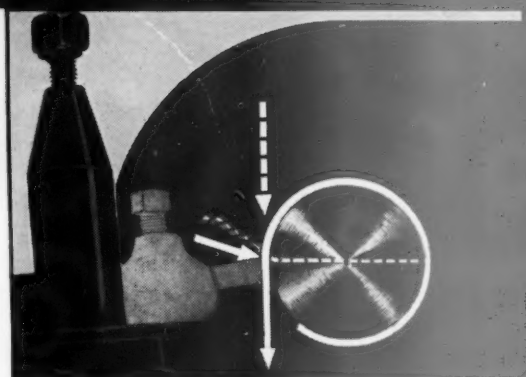
Latest Gisholt contribution to the war effort is the new Heavy-Duty Turret Lathe with time-saving Gisholt Speed Selector, which is helping American industry "MAKE IT FIT TO FIGHT."



"SELECTING THE PROPER TOOL to cut a specific kind of material is only part of a cutting operation. For the best results the machine should be operated at correct cutting speed. To select this speed properly, it should be kept in mind that the faster the rate of the cutting speed, the closer you approach the speed at which the cutting tool actually *cuts* the metal and does not just push it off the part being machined.



"TO ACHIEVE the desired clean cut, the tool used should be ground at regular intervals (Fig. 2 above). A good rule to follow is: the cutting speed for roughing tools should be maintained at a rate resulting in approximately a 4-hour tool life between grinds; with a tool life of from 8 to 12 hours between grinds for finishing tools.



"IT IS ALSO TRUE that the faster the cutting speed the better the finish on the work. For at the point of speed where the tool actually cuts the metal, in place of pushing it off, a very smooth finish will be produced. Always run as fast as the tools and the design of the work will permit.



"IT IS ALSO DESIRABLE to use a cutting lubricant that not only will keep the work and tool cool, but also will lubricate the cutting edge of the tool. This allows the chip to slide more freely over the top of the tool, thus producing a better cutting action and allowing an increase in cutting speed."

The correct cutting oil is as important to proper machine tool operation as the correct cutting speed. That's why Shell has developed a control technique that "balances" the oil to the machine, the application and the tool. Call in the Shell man now for details.



SHELL LATA OILS
FOR METAL WORKING

Which of These ... SPECIFICATION FINISHES Do YOU Need?

Quick Drying Metal Primer

Lacquer

Paints for Ammunition

Clear Phenol Baking Varnish

Ammunition Lacquer Enamel

Spar Water Resisting Varnish

General Purpose Lacquer Enamels

Quick Drying Camouflage Enamel

Dope, Cellulose Acetate, Clear

Aluminum Mixing Varnish

Lacquers for Shells, Bombs, Grenades, etc.

Paint, Cavity — for Torpedoes

DON'T let the problem of securing the proper Government Specification Finish hold up your war production jobs. You can depend upon our chemists, with their broad experience in formulating Government Specification Finishes for many war products, to give you the finish you must have for the materials or equipment you are producing for the Army, Navy, Air Corps or Marine Corps.

Our many years of pioneering development work in producing exclusive varnishes and lacquers for Permite Ready-Mixed Aluminum Paints, and the facilities of our modern plant, are also at your service.

Clear and colored lacquers, zinc chromate primers, enamels, mixing varnishes, camouflage paints, rust inhibitors — custom-built to your needs to meet Government Specifications — are included in the Permite Line. We also supply Permite Aluminum Paints on WPB allocation.

Quotations on any finishing needs submitted promptly upon request.



ALUMINUM INDUSTRIES, Inc.
CINCINNATI, OHIO

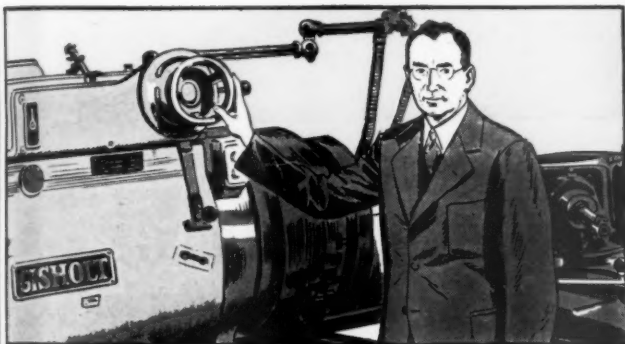
PERMITE *Industrial* FINISHES

When writing Aluminum Industries, Inc. please mention Purchasing

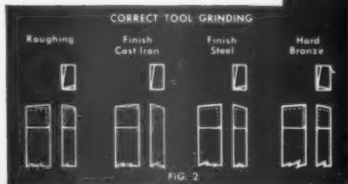
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SHELL LATA OILS
FOR METAL WORKING

Follow this BASIC BEARING PRINCIPLE



★ for today's longer bearing life under continuous load!

★ for tomorrow's more compact design, more efficient performance, more economical maintenance!

★ for greater bearing capacity in any dimensional limit!



ROLLWAY'S RIGHT-ANGLED LOADING... "better because it's simpler"



War has engineered complexity out of design, made simplicity a "must". But in bearings—the point around which most designs evolve—Rollway's right-angle loading long ago reduced load problems to their two simplest components—pure radial and pure thrust.



The underlying principle is basic and universal. You know that every radial load and every thrust load is carried full-on, AT RIGHT ANGLES TO THE ROLLER AXIS. No oblique forces, no uncomputed resultants affect your design.



And every part of every load is supported by solid, cylindrical rollers of uniform cross-section. There's no weak point to in-

vite stress localization, no wedging pressure, no danger of rollers pinching against the radius of the race.

Standard Sizes for Most Applications

S.A.E. or American Standard metric dimensions and tolerances are available for most applications... a wide range of sizes and types that are "engineered to the job." Avail yourself of Rollway's specialized bearing experience. Send your design or change-over sketch for free, confidential bearing analysis and recommendation. No obligation.

*TYPE MCS DOUBLE WIDTH RADIAL

*TYPE SDT DOUBLE ACTING THRUST

ROLLWAY

BUILDING HEAVY-DUTY BEARINGS SINCE 1908

BEARING COMPANY, INC., SYRACUSE, N. Y.

BEARINGS

When writing Rollway Bearing Company, Inc. please mention Purchasing



THE TIP OF THIS SHELL

IS A TIP TO THE FUTURE

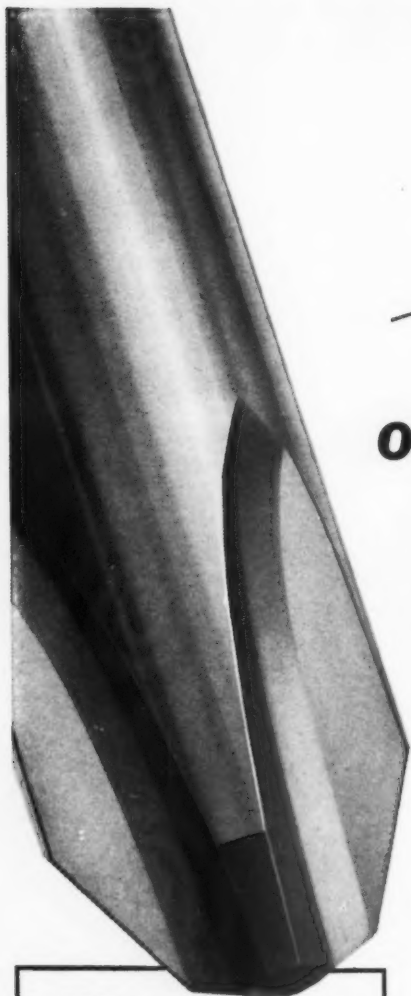
The fuse of this shell is made of plastics—something we're sure will help do a better job on the enemy.

This is a new achievement for the plastics industry, for these intricate parts require the highest engineering and manufacturing skills. It is also a tough test of material, and plastics passes that test superlatively.

Someday, when peace comes, the accumulated knowledge gained in producing plastics fuses will make the products of our daily life improved in design and operation, and lower in cost.

PLASTICS DEPARTMENT
GENERAL ELECTRIC

PD-2



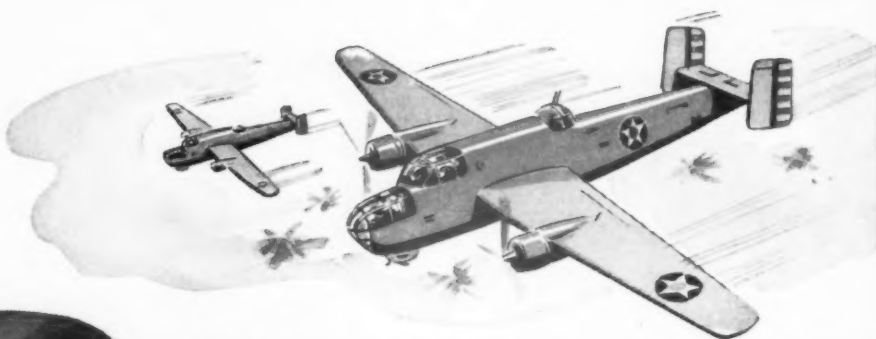
Phillips Driver-point fits snugly in tapered recess —WON'T SLIP OUT— permits high-speed driving.



On Tomorrow's Cars...

AMERICAN PHILLIPS SCREWS

will give the same speedy, tight fastenings that meet battle-tests on today's planes



Unskilled men and women are now assembling planes, tanks, ships and guns faster and stronger with American Phillips Screws than was ever possible using slotted-head screws and highly skilled labor.

American Phillips Screw Driving is quick and effortless:

1. Place the point of the Phillips Screw Driver Bit in the Phillips Recess (bit centers automatically).
2. Aim the driver with one hand. Other hand holds the work.
3. Press the power driver trigger . . . another American Phillips Screw driven straight and tight, with its head unburied and the work-surface unmarred. The Phillips driver can't slip out of the Phillips Recessed Head . . . can't sit any way but straight in the tapered recess. So women and inexperienced men hit top output at once, without undue fatigue or lost-time accidents. Production records and battle records prove American Phillips Screws to be among the powerful weapons of this war . . . *for they make time fight on our side.* And in the world of tomorrow, American Phillips Screws will, then as now, deliver highest speed at lowest cost. But right now, if *you* have assembly trouble on vital war work, you can save operations, time and materials with American Phillips Screws.

AMERICAN SCREW COMPANY

Providence, Rhode Island

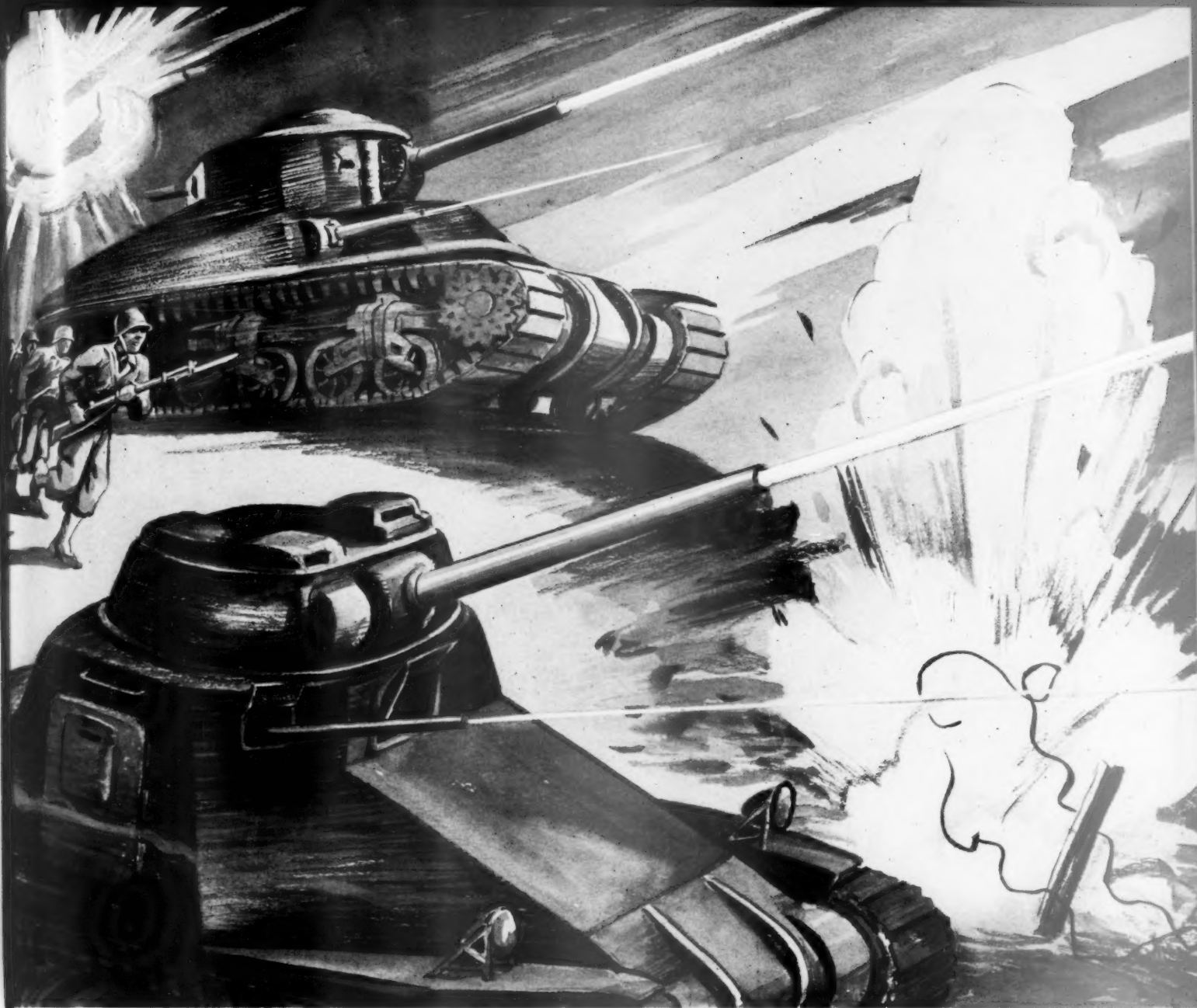
CHICAGO

DETROIT

589 E. Illinois Street

4-258 General Motors Bldg.

When writing American Screw Company please mention Purchasing



Proudly we fly the Army and Navy "E" flag and star, awarded and re-awarded for excellence and proficiency in the production of war material.

KROPP FORGE COMPANY

Makers of Drop, Upset and Hammer Forgings for Ships, Guns, Planes, Tanks, Ordnance and Machine Tools

"World's Largest Job Forging Shop" (A)

5301 W. Roosevelt Road, Chicago, Ill.

Engineering Representatives in Principal Cities



A CASE OF MASS LEAD POISONING

The superior ability of American tanks to deal out sudden death has been vividly demonstrated on many fronts. The enemy has made much of tank warfare, so we're giving 'em tanks—more tanks—tanks of greater fire power with the speed and ability to take it. We will beat him at his own game.

Vital in the building of tanks are the forged parts; tough, stress resistant parts which must withstand violent impacts and shock loads in the most abusive service, as they travel at high speed over the roughest terrain.

Kropp Forge is proud of the volume of rugged forged parts which it is turning out for use in America's tanks, tank destroyers and other field equipment. Our production crews are working in endless shifts, but we have the will and the increased facilities to serve more builders of tanks, planes, ships, ordnance and machine tools with drop, upset and hammer forgings. Your inquiries are solicited.



KROPP



“SEE-ABILITY” *adds manpower!*

Who says they never come back? There are thousands of older, experienced workmen going back on the job for the duration. The knowledge and ability of these men is needed in our war factories—men who know how to handle machines and equipment, how to get things done.

Improved See-ability through good lighting has made it possible for these older men to put their skill to work. For sharp vision, men in their sixties require more light than men in their twenties.

In placing these men, therefore, it is necessary to check

up on the See-ability needed for the work they are to do. In many cases this can be improved by making better use of present lighting equipment, checking reflective values of paint, distance of the lamp, avoiding shadows and glare. Helpful suggestions along these lines are included in a Westinghouse booklet, “See-ability for Indoor Eyes.” If you would like a copy, simply write Department F1, Westinghouse Electric and Mfg. Company, Bloomfield, New Jersey. Your local power company will also be glad to help you get more See-ability from your lighting equipment.



When writing Westinghouse Electric and Mfg. Company please mention Purchasing



See-ability in our war factories is now improved through better fluorescent lamps. Westinghouse Mazda fluorescent lamps are brighter from end to end, longer lasting, lower in cost, than ever before.

Westinghouse

★ MAZDA LAMPS ★

F O R G R E A T E R S E E - A B I L I T Y

When writing Westinghouse Electric and Mfg. Company please mention Purchasing

Tool Conservation begins in the Tool Crib



This Tool Sharpening Department under the supervision of an experienced tool engineer assures that every tool in the plant's cribs is in excellent condition.

GET ALL THE *Good* OUT OF *Good* Taps



This grinder located in a tool crib of a large aircraft engine plant is used for emergency sharpening and "touch-up" jobs.

For helpful information on how to keep taps at peak efficiency, send for "Greenfield's" new booklet, "How To Sharpen A Tap."



Maintenance of tools in proper working condition multiplies their life many times. Even those which have become badly worn, rusted or chipped — that seem to have outlived their usefulness — may often be salvaged to give valuable additional service.

Many large plants maintain separate tool sharpening and salvage departments. But the small shop or departmental tool crib may easily do an outstanding job if equipped with a small grinder and a few attachments.

GREENFIELD TAP AND DIE CORPORATION GREENFIELD, MASSACHUSETTS

DETROIT PLANT: 5850 Second Boulevard
WAREHOUSES in New York, Chicago and Los Angeles
In Canada:

GREENFIELD TAP AND DIE CORP. OF CANADA, LTD., GALT, ONT.



TAPS • • • • • DIES • • • • • GAGES • • • • • TWIST DRILLS • • • • • SCREW PLATES

When writing Greenfield Tap and Die Corporation please mention Purchasing



Just Born — But How It Can Talk!

THE 155 mm. gun, biggest weapon of the motorized divisions, uses parts of Synthane Bakelite-laminated.

The properties of Synthane essential for the war-making are the same as those that helped produce better products during peacetime . . . excellent electrical insulating characteristics, structural strength, light weight (half the weight of aluminum),

resistance to corrosion from acids, salts, water and solvents, and ease of machining.

When peace returns you will be better prepared if you will think and plan with industrial plastics such as Synthane now.

Synthane contributes to your study of plastics . . . data such as you will find on the back of this sheet.

10% for War Bonds—Treasury Department Honor Roll

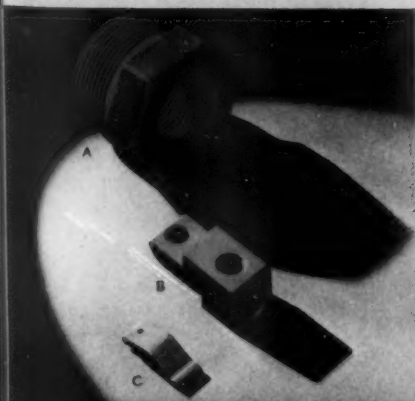
Plan your present and future with Synthane Technical Plastics

SYNTHANE CORPORATION, OAKS, PENNSYLVANIA

SHEETS • RODS • TUBES • FABRICATED PARTS

SYNTHANE
Bakelite — laminated

SILENT STABILIZED GEAR MATERIAL

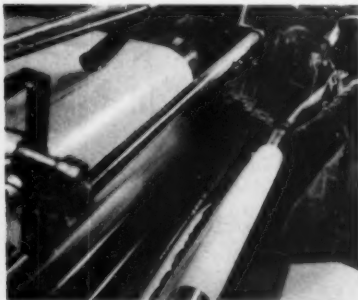


A. Sawed, milled, drilled and threaded packing gland. **B.** Sawed, drilled, milled and tapped fairlead. **C.** Molded, milled and drilled arm contact.

HOW SYNTHANE SHEETS, RODS AND TUBES ARE MADE

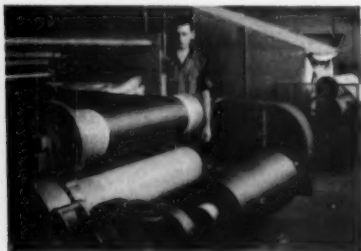
SYNTHANE Bakelite-laminated consists of a series of laminations of paper, fabric, or asbestos. Each lamination is impregnated with one or more coats of a Bakelite resin varnish before processing into sheets, rods and tubes.

Bakelite resin is a chemical compound of phenol and formaldehyde. When the two are heated together at a suitable temperature and in the presence of a catalyst to speed up the reaction, a clear amber solid resin is formed. In this stage, the resin can be melted and is soluble in alcohol or acetone.



SHEETS

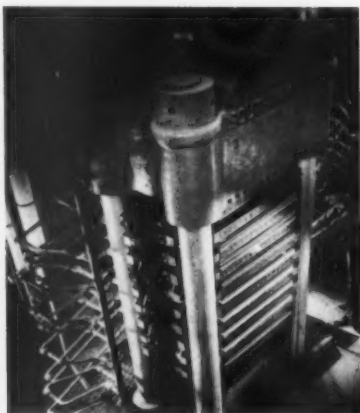
For the manufacture of SYNTHANE the solid resin is dissolved in alcohol to produce a varnish. The fabric or paper is impregnated by passing it over rolls which dip into the varnish. The depth of the coating is controlled by varying the specific gravity of the varnish, or by dipping more than once.



A drying oven, through which the coated sheet passes, evaporates the solvent.



After drying, the roll is cut into convenient lengths to fit the presses. A number of sheets, depending upon the thickness of the finished sheet desired, is piled up in the press. Heat and pressure are applied for a length of time sufficient to complete the chemical



reaction and transform the resin-impregnated layers into a hard and dense solid which will not delaminate, cannot be softened by the re-application of heat, is non-hygroscopic, and possesses excellent mechanical and electrical properties. In the curing process the Bakelite resin or varnish completely polymerizes.

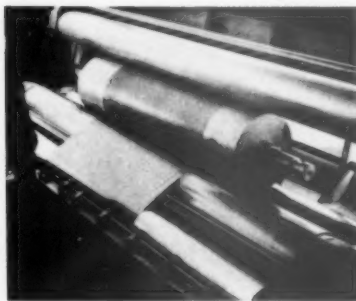


The characteristics of the finished sheet are determined by the grade of resin, type of filler used and time of cure. Those factors are dictated by the job.



TUBES

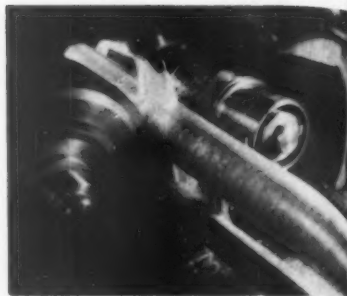
In the manufacture of SYNTHANE tubes, the bakelized paper or fabric is wound upon a mandrel under heat and very moderate pressure. This operation softens the resin and causes the laminations to stick together. Tubes are usually wound to a slightly greater diameter than called for, in order to provide a margin for grinding to size. In the manufacture of wrapped or rolled tubes, the wound tubes—as they come from the tube winding machine—are oven cured for several hours to complete the cure and form a hard dense wall which will not delaminate nor re-soften with heat.



In making molded tubes, the wound tubes—as they come from the tube winding machine—are placed in a mold, the diameter of which corresponds to the desired outside diameter of the molded tube. Tubes are wound to a diameter somewhat in excess of that corresponding to the mold diameter. The excess material squeezes out of the mold under heat and pressure. The mandrel is, of course, left in during the molding operation just as the mandrel of the wrapped tube is left in during the oven cure.



The final operation on wrapped or molded tubes after the mandrel has been removed is grinding. The tube is passed through the grinder several times, the final cut bringing it down to

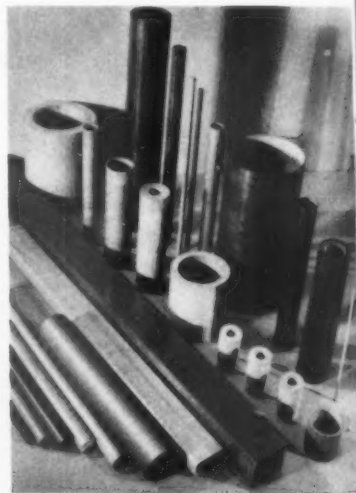


size. The tubes are sanded and polished if necessary or finished with any one of a variety of lacquers according to the specifications of the job.

Square or rectangular tubing may be supplied in almost any dimension in the rolled tubing.

RODS

SYNTHANE laminated rods can be made either by lathe-turning sheet stock or by tube molding methods. In the latter case, the impregnated paper or fabric is wound up on a very small mandrel to a slightly larger diameter than that of the mold. The mandrel is withdrawn, the rod is placed in the mold and subjected to heat and pressure. Excess material is squeezed out at the mold-joint during pressing.



SPECIAL SHAPES

Special shapes may be made by constructing a mold and building it up with the required paper or fabric pieces. Molded-laminated shapes possess strength exceeding that of ordinary powder-molded pieces.

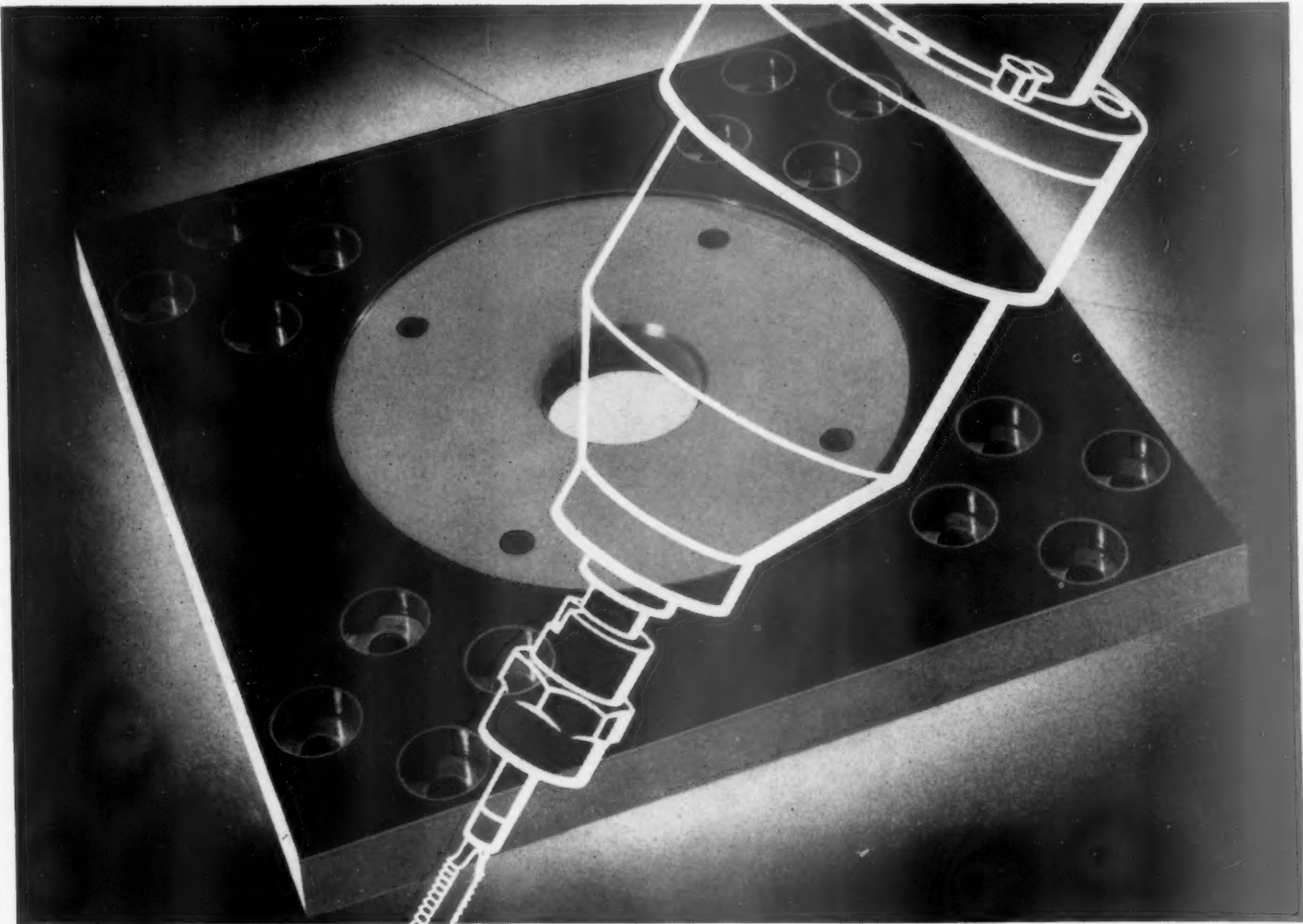
PLAN YOUR PRESENT AND FUTURE WITH SYNTHANE TECHNICAL PLASTICS

SYNTHANE
Bakelite —  — laminated

SHEETS • RODS • TUBES • FABRICATED PARTS • SILENT STABILIZED GEAR MATERIAL

SYNTHANE CORPORATION, OAKS, PENNA.

REPRESENTATIVES IN ALL PRINCIPAL CITIES



Drilling For Military Service

Made Easy for Rookies

"ROOKIES" in the machine shop now have to produce parts and finished products faster and in greater quantities than used to be expected from veterans.

That's another reason why INSUROK has won such wide approval among war products manufacturers. No special machinery or unusual skill is required for the fabrication of INSUROK. In drilling, for example, just use standard twist drills. Where quantity production is required, Tungsten-carbide tipped

drills are recommended, if available.

If you have a fabrication problem, Richardson Plastics will be glad to suggest efficient methods of production. Just send in your designs for their recommendations. If you do not have data covering the various grades of Laminated or Molded INSUROK, write for them.

The Richardson Company, Melrose Park, Illinois; Lockland, Ohio; New Brunswick, New Jersey; Indianapolis, Indiana. Sales Offices: 75 West Street, New York City; G. M. Building, Detroit.

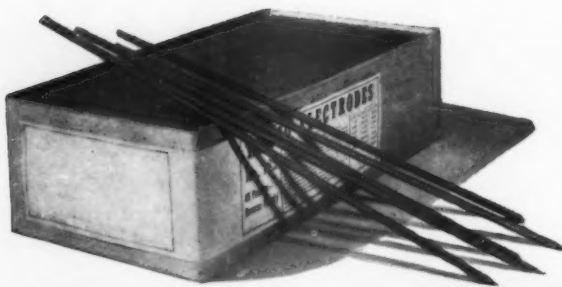
INSUROK and the experience of Richardson Plastics are helping war products producers by:

- ✓ 1. Increasing output per machine-hour.
2. Shortening time from blueprint to production.
3. Facilitating sub-contracting.
4. Saving other critical materials for other important jobs.
5. Providing greater latitude for designers.
6. Doing things that "can't be done."
7. Aiding in improved machine and product performance.

INSUROK

MADE AND SOLD ONLY BY THE RICHARDSON COMPANY

When writing The Richardson Company please mention Purchasing



AIRCO 63

Washed Coat Electrode
Available on Low Priorities



Delays in delivery of shielded arc electrodes need not hold up your shop welding jobs. For many types of welding work not subject to code regulations the Airco No. 63 washed coat electrode can be used. This electrode is ideal for tacking, light fabrication, maintenance, repair and similar work where severe service conditions are not encountered.

Airco No. 63 can be purchased on low preference ratings. It has a light surface coating which

assures improved arc stability and operating characteristics as compared with bare electrodes.

Made in 5 sizes: $3/32''$, $1/8''$, $5/32''$, $3/16''$, and $1/4''$ diameter, the Airco No. 63 has a tensile strength of 45,000 to 60,000 p.s.i. as welded, and an elongation of 7% to 10% in 2".

Get in touch with your nearest Air Reduction office for full information on the Airco No. 63 electrode.

Air Reduction

General Offices: 60 EAST 42nd ST., NEW YORK, N. Y.

IN TEXAS:

MAGNOLIA-AIRCO GAS PRODUCTS CO.

General Offices: HOUSTON, TEXAS

OFFICES IN ALL PRINCIPAL CITIES



IDLE CYLINDERS ARE PRODUCTION SLACKERS: Keep 'em rolling for victory!

When writing Air Reduction Sales Co. please mention Purchasing

A Sheave Like This
Will Ruin
Wire Rope—

Yes, Even..

HAZARD LAY-SET *Preformed*

Never install a new wire rope on a worn sheave—to do so invites early failure. When the groove gets too wide, it permits the rope to flatten. . . . And don't try to run a new rope over a groove that is too narrow. That pinches the life out of it.

Before installing a wire rope (even the longer-wearing, easier-handling Hazard LAY-SET *Preformed*) carefully check the condition of your sheaves, using the standard sheave groove gauge. For calculating safe groove diameters, the following table gives the exact extent by which the groove diameter should exceed the diameter of the rope:

For ropes of the following diameters in inches	Groove diameter should be greater than rope by not less than the following fraction of an inch	Groove diameter should be greater than rope by not more than the following fraction of an inch
1/4 to 5/16	1/64	1/32
3/8 to 3/4	1/32	1/16
13/16 to 1-1/8	3/64	3/32
1-3/16 to 1-1/2	1/16	1/8
1-9/16 to 2-1/4	3/32	3/16
2-5/16 and larger	1/8	1/4

Save critical steel by careful inspection and proper maintenance of *all* equipment and by using Hazard LAY-SET *Preformed*—the greater dollar value rope. All Hazard ropes made of Improved Plow Steel are identified by the Green Strand.

HAZARD WIRE ROPE DIVISION

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles
New York, Philadelphia, Pittsburgh, San Francisco, Tacoma

AMERICAN CHAIN & CABLE COMPANY, INC.
BRIDGEPORT, CONNECTICUT

HAZARD LAY-SET *Preformed* WIRE ROPE

When writing American Chain & Cable Company, Inc. please mention Purchasing



IF IT'S PIPING CONTACT FLORI

OUR scope: Fabricated Piping...for
steam, water, air, oil, gas, chemicals

Random mill or cut lengths, bent,
coiled, welded, flanged, threaded.
Valves, Pipe Fittings.

In brief: anything in tubular or
plate steel fabrication.

Our customers: United States of
America and Allied Nations.

Send us your inquiries.



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PIPING

THE FLORI PIPE COMPANY • ST. LOUIS, MO.

When writing The Flori Pipe Company please mention Purchasing

THE "DUMB" PASSENGER



The crack express was already pounding its way west when the reporters decided to call it a night. Tomorrow's job—a feature story on a war industry—meant miles of walking, and they knew it. "Looks like a swell story," said the one, and the other yawningly agreed. "We'd better turn in," he added.

* * *

Up forward, bound for the same destination and restless with the sway of the baggage car, lay another passenger—a mute, inert bundle of steel. Could it have spoken, it might have pointed up their story.

Six hours ago, it had lain in a freight car, buried under 15 tons of its kind. Ordered while en route to a warehouse, it had been released by an emergency

call when still in the car. Warehousemen had unloaded the entire car to reach it, had raced to get it to the station, had placed it aboard the express while even the conductor's watch frowned. Tomorrow this bundle of steel would meet its destiny—on a production line dedicated to freedom.

Hardly a headline story, this, but the final story of America's war production will be a total of thousands like it.

For behind America's might is a host of such small, *extra* efforts. The common denominator of our production victory . . . will be that extra heave on a wrench, that extra swing of a hammer, *that extra try . . . that wins.*

Frasse

Mechanical and Aircraft STEELS

Peter A. Frasse and Co., Inc., New York, Philadelphia, Buffalo, Jersey City, Hartford, Rochester, Syracuse

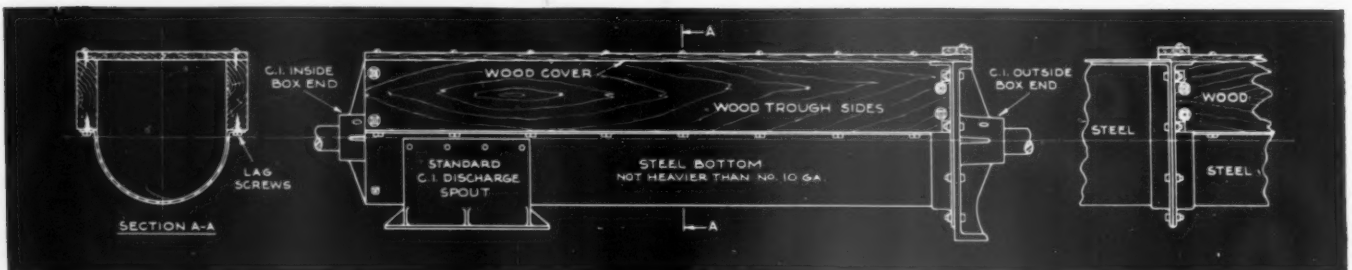
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Now

COMBINATION WOOD AND STEEL SCREW CONVEYOR TROUGHS TO CONSERVE STEEL



Our ships, tanks, guns and aircraft are the front line defense of American liberty. Industrial uses of steel must be measured by actual necessity and the tonnage reduced with consideration for safety of life and fire hazard only. Designs heretofore made popular by conveniences and the ultimate in years of service must be re-engineered as metal savers.



Section thru Combination Wood and Steel Screw Conveyor Trough

Complete unit showing how standard inside or outside box ends and cast iron discharge spout can be applied.

Illustrating how Combination Wood and Steel Screw Conveyor Troughs can be connected to existing all steel troughs.

The necessity for an uninterrupted flow of food products to sustain our soldiers while operating ships, tanks, aircraft and artillery has taxed existing materials handling equipment. Extensions and replacements thus made necessary can now be accomplished with the Link-Belt Combination Wood and Steel Screw Conveyor Trough.

Adapted to all standard screw conveyor fittings.

Will connect with existing steel troughs without costly alterations. The drop bottom feature facilitates cleaning or replacement and gauges of steel adopted as standard conform to those listed for all steel trough, not exceeding No. 10 gauge.

Link-Belt engineers have a thorough knowledge of limitation orders and are at your service in this vital war effort.

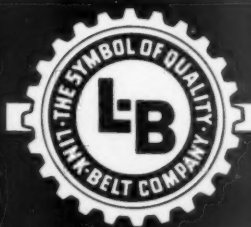
LINK-BELT COMPANY

Engineers and Manufacturers of Materials Handling and Mechanical Power Transmission Machinery Since 1875
Chicago, Indianapolis, Philadelphia, Atlanta, Dallas, Pittsburgh, Cleveland, Detroit, San Francisco, Toronto
Offices, warehouses and distributors in principal cities

9005

LINK-BELT

SCREW CONVEYOR



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YOU'VE GOT TO SPEAK THE LANGUAGE...



DRIVING 'EM OR *BUILDING 'EM!*

IN PURDY, war plants can find an organization that knows steel problems and talks and thinks about them in the language of production. When standard materials and procedures don't work out or can't be used, Purdy men are right there with practical ideas to get the job done—and they can draw on the complete line of PLANET drill rod, tool steel, spring steel and cold-drawn steel to see it through.

Tanks, trucks, planes or guns—whatever you're making today, if you have a problem in steel supply or application, or a tough angle that demands extra ingenuity in using steel, call on Purdy for quick action.

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PLANET Polished Drill Rod is one Purdy product that "talks" production language too. Commercial grade—1.00 Carbon. Finish ground and annealed. For dies, reamers, rollers, drills. (Sizes from .013 to two inches.) All sizes in 3-foot lengths, many sizes in 12-foot lengths.

Special Drill Rods: Choice grade—1.15/1.25 Carbon. Best for higher-type work, sharper edges, finer tools. Particularly good for punches. (Sizes from .024 to 1.5 inches.) Carried in 3-foot lengths.

Flat Drill Rods: High grade—1.00 Carbon tool steel. Lime drawn and annealed. For former parts, gravers, dies, punches, cutters. Sizes of flats from 1/16 by 1/32 to 1/2 by one inch, of squares from 1/16 to one inch. Carried in 3-foot lengths.

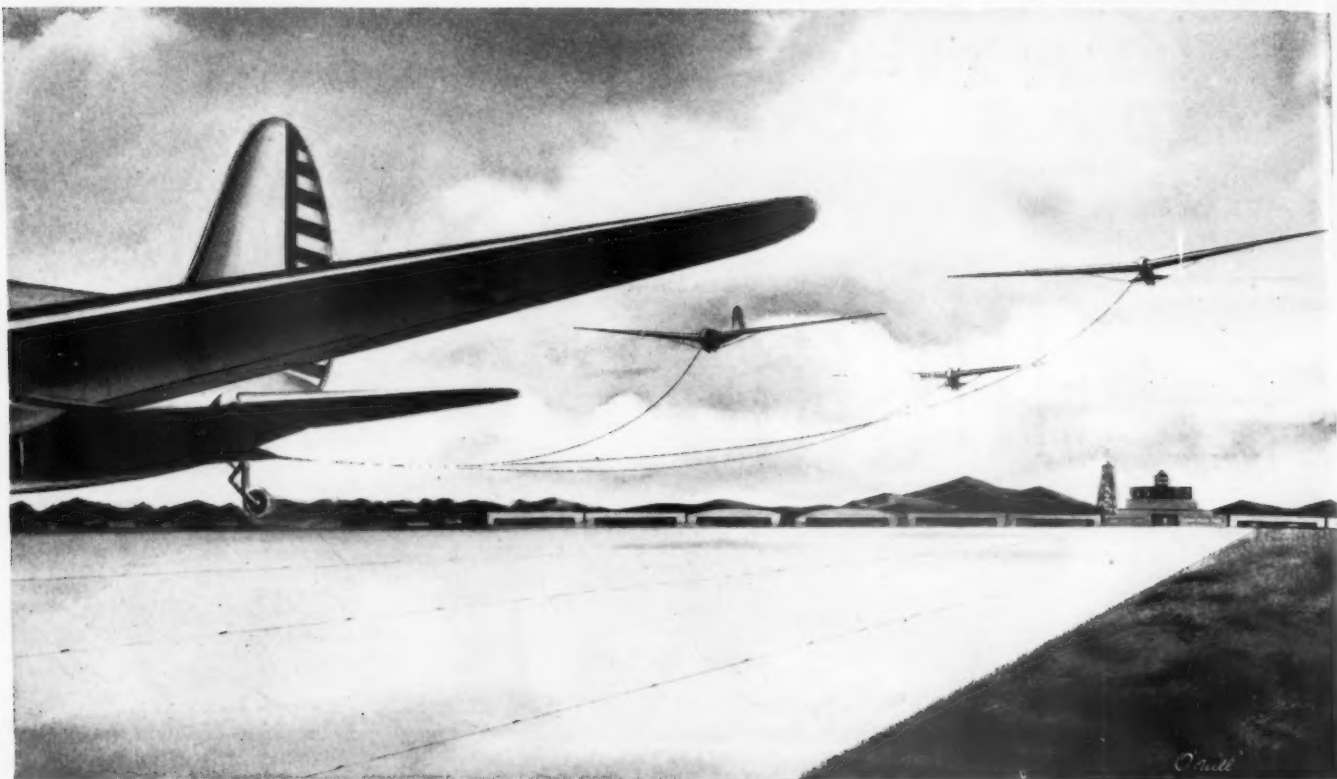
Simonds "Red Streak" Flat Ground Stock, made from Annealed Tool Steel and ground within limits of plus or minus .001 inch. Square on both edges and ends. Saves time in making jigs, gauges, templates and tools. Sizes from 1/64" x 4" to 1" Square.



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When writing A. R. Purdy Co., Inc. please mention *Purchasing*

ONLY AN ELECTRICAL WHOLESALER COULD THUS SPEED WAR PRODUCTION



WESCO helped gliders fly 5 weeks earlier

*Delivered Materials Complete in 19 Days;
Huge Plant Met Government Deadline*

In the granary of America a glider plant was ordered built; time limit for completion 30 days. On the 20th of the month the nearest Wesco House received the large order for panelboards, transformers, fluorescent lighting, power cable and potheads. The job was awarded because of Wesco's reputation for fast delivery and follow-through service.

Wesco placed all orders the same day and suppliers the country over sprang into action. In less than a week trucks rolled up and began unloading at the site. In 19 days every item ordered from Wesco was on the job as compared with 7 weeks best possible delivery from manufacturers. The plant was completed and in production on the 30th day.

This Wesco performance, and scores like it, don't just happen. They are the result of years of training, experience and individual ability. Wesco service has enlisted "for the duration". After Victory it will again speed the development of business.

WESCO SPEEDS PRODUCTION

- * A Marine air base needed delivery of hundreds of electrical items next morning. Five Wesco Houses pooled stocks and met the deadline.
- * Lack of a critical product threatened to tie-up a war chemical plant. The manufacturer promised delivery in 60 days. Wesco delivered in 24 hrs.!

WESCO SERVES BUSINESS

- * By warehousing stocks in anticipation of customers' needs.
- * By providing engineering service in making up lists of materials and in preparing bids on jobs.
- * By buying large quantities at low prices and passing the savings on to small-quantity buyers.

Westinghouse Electric Supply Co.

150 VARICK STREET • • • NEW YORK, N.Y.

A NATIONAL DISTRIBUTING ORGANIZATION WITH 80 BRANCHES

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PURCHASING PREVIEWS

From the Washington office of

PURCHASING

National Press Building
Washington, D. C.

February 2, 1943

For Purchasing Executives:

INCREASED REPUBLICAN STRENGTH IN CONGRESS will not result in any drastic changes in the basic war legislation already in effect. The new Congress will tighten down, and call some of the Government war agencies to account. There will be fewer pieces of legislation passed by Congress, but it is likely that such legislation as will be adopted will be better conceived.

There is no indication that there will be any tendency toward isolationism. "Must" war legislation will be given the green light by Congress, and the powers considered necessary for the prosecution of the war will be voted. Cloakroom politics will be more partisan in nature, but on the floor of the legislative bodies there will probably be a greater degree of cooperation between Democrats and Republicans in voting on basic war legislation.

Reason for cooperative trend is the fact that the Republicans, for the first time in 10 years, now have to assume real responsibility in connection with legislation. On some bills, the Republicans will draw sufficient strength from the Democratic side to constitute an unquestioned majority. This makes political sniping impossible. The Republicans will have to take a positive approach toward legislation.

On the other hand, Democrats will be forced to take a more realistic attitude. It will no longer be sufficient merely to label a measure as a war expedient to insure enactment.

As always, it is difficult to forecast action by Congress. The diverse political considerations make prophecies uncertain at best. Sentiment, however, seems to indicate that Congress will vote to continue Lend-Lease in some form or other.

A pay-as-you-go tax collection approach seems to be favored by Congress in some form. The Administration aim is to collect a maximum amount of taxes, and consequently there is opposition to cancelling out the entire 1942 tax year. On the other hand, it is recognized that unless a pay-as-you-go device is adopted, large sums of tax money due from workers in war industries will be lost.

Political considerations will likely defeat any labor control legislation. Neither political party will seek to antagonize organized labor in view of the vote wielded by this group. Acute manpower shortages later in the year may force legislative action, but Congress will shy away from legislation until all alternatives are exhausted.

Temper of Congress will be regulated by the developments in the war. If the war goes well, the Administration legislative strength will be enhanced. Military reverses will tend to put the opposition in the saddle.

PRENTISS BROWN—former Senator from Michigan, who was the Administration wheelhorse in its price legislative program---"earned" his present post as Price Administrator. It is generally agreed that it is a

thankless job. Final yardstick as to success or failure will be applied when the emergency is over. Prices will move up despite any action OPA can take. Objective will be to avoid uncontrolled inflation.

Observers indicate that the current price levels are lower than economists had anticipated for this stage of the war economy. Immediate danger is the fast accumulating surplus of purchasing power. Surpluses are accumulating faster than expected. Income taxes will mop up a large amount of these surpluses, and WPB plans for a "bedrock" civilian economy will further reduce the supplies of goods available to the purchaser.

These tendencies further emphasize the relationship between price control and rationing in the efforts to stave off uncontrolled inflation. Inflation control divides itself into four major phases--1. Maintenance of price ceilings. 2. Control over marketing of materials and goods to insure equitable distribution. 3. Absorption of excess purchasing power through taxes and sale of Government bonds. 4. Wage control.

Pattern of price control in the industrial field has been crystallized. In the wholesale and retail markets, however, the controls require extensive change and refinement. There will be considerable change during the next 12 months, aimed at simplification.

The cost-of-living index has been fairly constant for the last several months. This index will rise slowly if the OPA is successful in its price control program. The rationing program is the most complicated of all problems facing OPA. Rationing affects the entire population, and requires detailed administrative controls.

Sale of Government bonds and the tax program are inter-related. Both are mechanisms to absorb excess money not expended for goods and services, as well as providing the primary means for financing the war program and for the normal processes of Government. New taxes and further advance in tax rates are inevitable.

Wage control efforts will be aimed at stabilization, and finally the establishment of some ratio between wages and the cost of living.

An imponderable in the battle against inflation is the political aspect of both price control and rationing, with sectional and group interests jockeying for advantage. Farm interests and organized labor represent the most vocal political pressure groups. OPA job is to conciliate these groups through demonstrating control over the cost of living the case of labor, and control over both cost and distribution of goods in the case of the farmer.

JOINT STATEMENT OF POLICY issued by the War Production Board, the Army and Navy in cases where delivery on outstanding contracts is cut calls for instruction to the prime contractor to effect no more than the same percentage of reduction in the schedules of his subcontractors as was ordered in the prime contract.

Should the prime contractor be a manufacturer, for example, of artillery or ammunition and should his output be revised downward by 10%, he should not curtail the output of any sub-contractor in excess of 10%. Such horizontal cuts may not be efficient in every case, but they will be effected wherever practicable, unless there is some alternative war job waiting for the subcontractor's facilities.

Where readjustments are deemed necessary in existing programs, it is the policy of the armed services to give particular attention to a continuance of operation in those facilities employing the minimum amount of materials and the minimum number of man-hours to complete like components and like end-items. The law covering small war plants is, of course, operative in such cases and its provisions are followed whenever revisions are made.

Wanted

YOUR IDLE STRAPPING TOOLS ...FOR VITAL WAR NEEDS

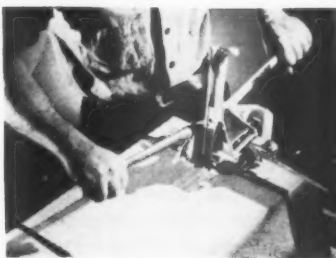
STRAP-APPLYING tools are needed at once . . . to assure safe arrival of war materiel at our far-flung fighting fronts.

Without these tools (essential to proper strap application) . . . ammunition, food and equipment may be damaged in transit and rendered useless . . . at a time when every pound of war product is sorely needed.

Without steel strap protection, the resulting damage may nullify

production gains . . . may cause irreplaceable losses of man-hours and materials.

Production of Acme strap-applying tools has been increased to the limit . . . new speed records have been set . . . Yet, demands of the armed services and war plants . . . combined with the limited supply of critical materials from which tools are made . . . have taxed the tool manufacturing capacity of the strapping industry.



HERE'S HOW YOU CAN HELP

Loan us your unemployed strapping tools until such time as you will again need them . . . when they will be replaced. Or, if you prefer, you will receive a cash credit now based on the current return value. Should you have idle strapping tools

other than Acme, write the manufacturer. He, too, will very likely be glad to know of your willingness to co-operate in this all-out effort.

**FILL IN BELOW TO ENLIST
YOUR IDLE STRAPPING TOOLS
FOR WAR WORK**

ACME Steelstrap PROCESS ACME STEEL COMPANY

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Pittsburgh • Portland, Ore. • St. Louis • St. Paul • San Francisco
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We are returning the following Acme strap-applying tools:

☐ These tools are loaned to you until we require their return.

OR

☐ These tools are returned for credit based on current return value.

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Company _____

Address _____

When writing Acme Steel Company please mention Purchasing

SAVE BUYING TIME ON ELECTRICAL ESSENTIALS

by a Single Hour's Check-Up of the Graybar MM Plan*

Here's a plan that will help to mobilize the electrical supplies you need for war work with less difficulty and delay . . . a plan that can reduce the load on your purchasing department and plant engineers, saving office time and operating time.

THE FIRST STEP in the MM Plan is to sit down with your local GRAYBAR Man and review your anticipated needs and essential repeat purchases, rechecking your customary specifications in the light of what's likely to be obtainable in 1943.

THE SECOND STEP is to go over the "paper-work" now involved in obtaining estimates, ordering or complying with priority and allocation rules on electrical supplies. Almost invariably, GRAYBAR can put its experience to work to simplify compliance with necessary "red-tape", and to assure that deliveries are not held up because priority papers must be sent back for correction.

THE THIRD STEP is to consider how GRAYBAR's local warehouse and delivery facilities can tie-in more closely with your receiving department and stock-room operations. This may save space you badly need, eliminate transshipments and rehandling.

THE FOURTH STEP is to review the opportunity for relieving the load on your contractor or engineering staff by using GRAYBAR Specialists in planning lighting, signaling, power distribution or other electrical applications.

ONE HOUR spent with your GRAYBAR Representative "dovetailing" this all-inclusive electrical supply service to your future needs may save hundreds of precious man-hours later on. Why not call GRAYBAR now for details on this MM Service?



Your local GRAYBAR Representative is the key man in this plan: He puts his experience as a Materials Mobilizer to work "dovetailing" your essential electrical needs with the available production of more than 200 manufacturers.

*Serving as Your MATERIALS MOBILIZER

...on electrical supplies, GRAYBAR makes its procurement experience a part of your war production facilities. In an emergency, GRAYBAR men at more than 80 points throughout the country will attempt to locate and bring together what you need to keep war production moving, to the full extent that priority and allocation regulations permit.

Executive Offices:
GRAYBAR BUILDING
New York, N. Y.

GraybaR

IN OVER 80 PRINCIPAL CITIES



When writing The Graybar Electric Company please mention Purchasing

PURCHASING

FEBRUARY, 1943 CONTENTS



Published monthly by

CONOVER-MAST COMPANY

Publication Office: Orange, Conn.

Editorial and Executive Offices:
205 East 42nd Street, New York, N. Y.

HARVEY CONOVER...President and
Treasurer
B. P. MAST.....Vice-President
and Secretary
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Cleveland
Duncan A. Scott & Co.
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Western Pacific Bldg., Los Angeles



PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

VOLUME XIV, NUMBER 2, 35c per copy, \$3.00 per year. Extra postage for Canadian and foreign subscriptions \$1.00 a year. Contents are indexed weekly and annually by the Engineering Index Service. Copyright 1943 by Conover-Mast Company in the U.S.A.

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30% OF ALL INDUSTRIAL ACCIDENTS ARE TO HANDS AND FINGERS



According to the National Safety Council, 30% of all time-out, industrial accidents are to fingers and hands. 20% of these accidents result in infections. And a workman who has lost his hand through infection is just as incapacitated as if he had lost it in a punch press or buzz saw.

We hope you have never had a lost-time accident due to wire rope. Some operators have, however, and 1943 is no time to have workmen laid up with blood-poisoned hands. Many operators have drastically reduced accidents (and compensation claims) by adopting American Cable TRU-LAY Preformed—the safer rope.

Being preformed, American Cable TRU-LAY is tract-

able—flexible—easy to handle. It resists kinking and snarling. Worn or broken crown wires lie flat and in place—refusing to wicker out to puncture hands or tear clothing... Furthermore, being preformed, TRU-LAY will last longer than ordinary cable. It has far greater resistance to bending fatigue. That means reduced machine shutdowns for replacement—steadier production—greater dollar value. . . . All American Cable ropes identified by the Emerald strand are made of Improved Plow Steel.

WHEN ROPES ARE WORN



AMERICAN CABLE DIVISION

Wilkes-Barre, Pa., Atlanta, Chicago, Detroit, Denver, Los Angeles, New York, Philadelphia, Pittsburgh, Houston, San Francisco, Tacoma

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT • CONNECTICUT



ESSENTIAL PRODUCTS . . . TRU-LAY Aircraft, Automotive, and Industrial Controls, TRU-LOC Aircraft Terminals, AMERICAN CABLE Wire Rope, TRU-STOP Brakes, AMERICAN Chain, WEED Tire Chains, ACCO Malleable Castings, CAMPBELL Cutting Machines, FORD Hoists, Trolleys, HAZARD Wire Rope, Yacht Rigging, MANLEY Auto Service Equipment, OWEN Springs, PAGE Fence, Shaped Wire, Welding Wire, READING-PRATT & CADY Valves, READING Electric Steel Castings, WRIGHT Hoists, Cranes, Presses . . . *In Business for Your Safety*

When writing American Chain & Cable Company, Inc. please mention Purchasing

CONSERVATION OF BUSINESS

PURCHASING Agents who are looking ahead to the post-war business situation, as well as trying to do a sound procurement job "for the duration," have noted with concern the increasing rate of business mortality noted since the spring of 1942. It is particularly disturbing in view of the fact that the birth rate of new enterprises — normally higher than the death rate — turned downward definitely in mid-1940 and has been going steadily lower for 30 months. For more than a year, the business birth rate has been substantially less than the death rate, and the spread is widening.

The buyer's interest in these statistics lies in the fact that healthy competition, alternative sources of supply, the assurance of service, and a great deal of industrial initiative, all depend on the maintenance of these units in the industrial field. Good buying practice has always recognized the wisdom of encouraging new and small enterprises, even though it might be easier and perhaps cheaper at the moment to let them work out their own salvation. It is a matter of common experience that many of these companies have developed into the large and well established companies whose existence and prosperity became a valuable asset to the purchasing department.

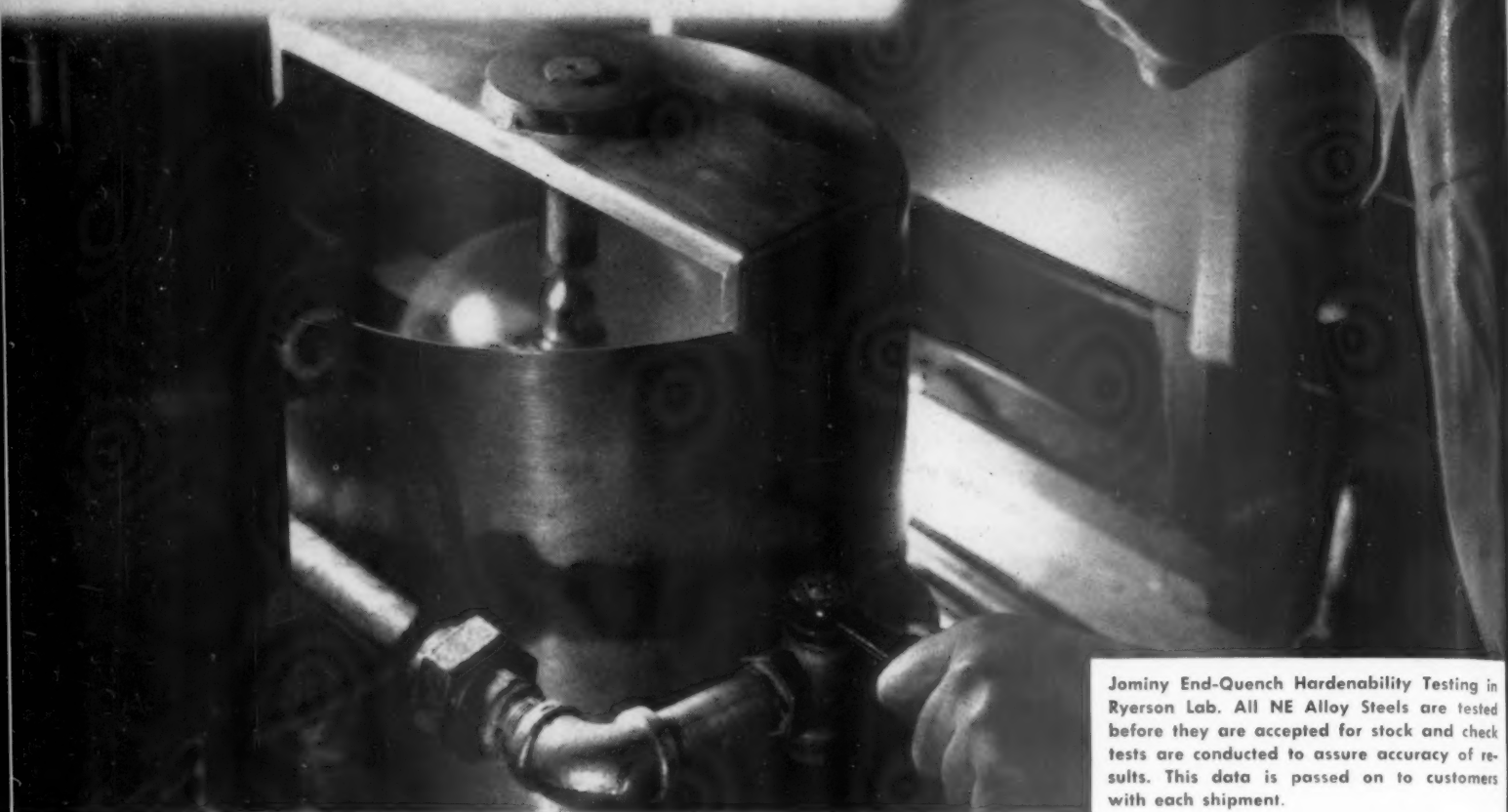
Some of the casualties, of course, have been among the weak and marginal producers who contribute little to the national economy. But many of the recent suspensions have not been a case of insolvency or incompetence; they are traceable to lack of materials, inability to effect total conversion to the war effort, governmental restrictions, the non-essential nature of their products, and similar causes. The result is the same — a contraction of potential supply sources.

There is cause for gratification, therefore, in the recent aggressive action of WPB to come to the aid of the smaller war plants with a broader distribution of orders — helping to maintain their facilities, organization, and resources at a subsistence level, at least. It is quite possible that their immediate and tangible contributions to war production might be absorbed in the schedules of the larger plants, with less effort and no greater cost. But the essential character of American enterprise can best be insured, and the inevitable post-war readjustment eased, by making it possible for these thousands of plants to survive and to take their modest but useful place in the ranks of the production corps.

Stuart F. Neimitz

SWITCH TO NE STEELS

...with Assurance



Jominy End-Quench Hardenability Testing in Ryerson Lab. All NE Alloy Steels are tested before they are accepted for stock and check tests are conducted to assure accuracy of results. This data is passed on to customers with each shipment.

NE Alloys in Ryerson Stocks

Write for New Booklet

New Technical data — including heat treatment response—is available on NE (National Emergency) Steels. Ryerson tests all NE Steels in stock. This test information is furnished with each shipment of that particular NE Steel. Thus, users can choose which of the lean-alloy steels will best replace the steels of high alloy content previously used.

Jominy End-Quench Hardenability Tests, standard for NE Steels, are a quick, reliable method of determining heat treatment response. How this test is made, the results obtained, and how to interpret hardenability in terms of tensile strength, yield point, elongation, and reduction of area, are clearly told in a recent Ryerson publication on NE Steels. Copies are available—call or write your nearby Ryerson plant.

Representative stocks of NE Steels are available at Ryerson for prompt shipment. Turn-over is rapid; withdrawals are heavy, but new stocks are constantly being received. Ryerson engineers and metallurgists will gladly answer any question you may have and help you get started with NE Steels.

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A HANDBOOK ON NE STEELS
New, complete, authoritative! Compiled by Ryerson. If you are adapting NE Steels to your production and haven't a copy, ask for one today!



RYERSON STEEL-SERVICE



PAPER PARADE - PART II

The Inside Story of the Controlled Materials Plan

By Myron Zobel

Co-Author of Contract Production Control

Editor's Note: In the first installment of "Paper Parade," which was published in the January issue, Mr. Zobel outlined the early stages of vertical allocation as the principle was applied to the flow of materials in American industry, leading up to the formulation and adoption of the Controlled Materials Plan. In this second and concluding installment, he discusses the operation of the plan and how industry can best adjust itself to the new methods so as to attain the objectives of vertical allocation with a minimum of confusion—for such control is essential to smooth and balanced

production, and its success is definitely in the hands of industry itself. In this discussion, based on intimate experience with the entire development of vertical allocation, he projects the operation of CMP over the new and enlarged production schedules of 1943. Written in December, several of the predictions, such as the extension and classification of B products, have already come to pass, and others are definitely on the way. The article therefore combines the practical "how" of present procedure and expert foresight as to probable further developments.

IV. THE ABC OF CMP

AN ATTEMPT toward over-simplification in distinguishing between A and B products must be avoided. Analysis of 4,000 parts covered by the CPC experiment revealed that the best determinants between A and B products is whether they are "made to measure" or "made for the shelf." One third of the automatic screw machine parts (nuts, bolts, and washers) were classified both by the prime contractors and by the part suppliers who made these parts as better suited to vertical allocation. They were "special runs" made of special materials and required the setting up of the automatic screw machines for that particular run and its dismantling when the run was completed. Attempts to classify these "special" automatic screw machine parts as B parts would result in a shortage of the special materials involved. The first consideration therefore,

in setting up components for horizontal allocation is this: "Is it tailor-made or is it purchased 'off the shelf'?"

Here is a rule which each Prime Consumer can follow easily without reference to voluminous anthologies of Class B products. For the Prime Consumer knows at a glance whether the part in question is made-to-order for him or whether it is an off-the-shelf item which he can buy from several alternative suppliers.

This classification of "ready-made" items we will refer to as D items. It is not likely that the total controlled Materials involved in the entire D program will exceed 10% of the total available supply of these three Controlled Materials, and therefore manufacture of the Class D items should be continued on a straight horizontal plan similar to PRP as it will be exceedingly difficult to classify these class D items (things like

hardware, nuts, bolts, screws and washers, ready-made parts and assemblies thereof) against their proper Industries Division. It might indeed be considered advisable that a special Division be set up in the War Production Board in order to lift the allocation of these innumerable "ready-made" items from the shoulders of the already over-burdened Industry Divisions. Nor should any attempt be made to charge back the three Controlled Materials in these class D items against the Claimant Agencies. But instead the "Commercial Division", as it might be called, would have a Controlled Materials quota of its own to maintain continuous full capacity operations of the plants manufacturing class D items.

It is most essential, however, that the quota of class D items be kept definitely below the 10% level of the national supply. This is important because, being impossible to correctly credit class D items against contract or Claimant, it will not be possible for the Commercial Division to cut-back requests for Controlled Materials used in class D items. However, carefully kept records of Controlled Materials in inventories and of unsold stock of class D items will indicate whether the supply of these class D items is exceeding the demand and in approximately what proportion they are flowing to Claimant Agencies.

Purgatory Items

We now come to the intermediate group, components which are "made-to-order", but which for the sake of simplification and speed it is desired at this time to place in a special intermediate or "purgatory" classification. These include many of the items now referred to as B1. They should continue to be controlled by appropriate Industry Divisions.

These purgatory items will be referred to here as Class C items. These Class C items should have the following points in common:

- (a) They are made-to-order, not just assembled, like a small motor, from ready-made parts.
- (b) They involve relatively small quantities of the controlled materials.
- (c) No facility bottleneck exists in their manufacture.

Controlled Materials should be allotted to all on a horizontal plant basis by the appropriate Industry Divisions, since it will be difficult to collect satisfactory Bills of Materials on most of these items. Therefore, it is essential that the total of Controlled Materials involved in Class C items should not exceed 15% of the total supply. This will again permit a generous "yessing"

of the horizontal plant Applications for these materials.

No direct charge should be made against Claimant Agencies by the Industry Divisions for Controlled Materials consumed in class C items used in their end-products. Furthermore, it will not be practicable to schedule production on these class C items with any great degree of accuracy. Their manufacture must be continuous and as little burden as possible placed on industry to gather any but the most perfunctory Bills of Materials on class C items.

Great care must also be exercised not to over-burden the Industry Division with detail work on class C items. The objectives here as in the class D items must be to make them, to make as many of them as possible, to make them as fast as possible, and still to come as close as they can to a reasonably correct Allotment of Controlled Materials on a horizontal plant basis.

Class C and D items need not be included in Bills of Materials as the Claimant Agency is not charged with these materials and they are not critical either as to materials or production bottlenecks.

We now come to class B items to be allotted and scheduled by the Claimant Agencies. It should be the objective of the Controlled Materials Plan to make of the class B category a sort of "catch-all" and to place into it items which, because of their technical nature or because of the bottlenecks which exist in their manufacture, or because of their experimental type, cannot be turned over to the Industry Divisions. Class B items should be controlled by the Claimant Agencies and Bills of Material collected by them, and Controlled Materials allotted by them. The Allotment by the Claimant Agencies to the Prime Consumers will in some cases be vertical contract Allotments. In other cases they will be horizontal plant Allotments, depending upon the accuracy of the Bill of Materials and the amount of Controlled Materials involved. Gun mounts for tanks, dynamotors for radios are the type of articles which would be included as class B items. Certain of the class Z items would be moved up into class A when they became crystallized in design or when their production rose to a heavier consumption of Controlled Materials, or when a sufficiently accurate Bill of Materials had been collected to entitle them to inclusion in the class A group. Every effort should be made not to allow class B items to cover more than 25% of the available supply of Controlled Materials. However, a product not specifically listed as a class D or class C item shall be considered a class B item.

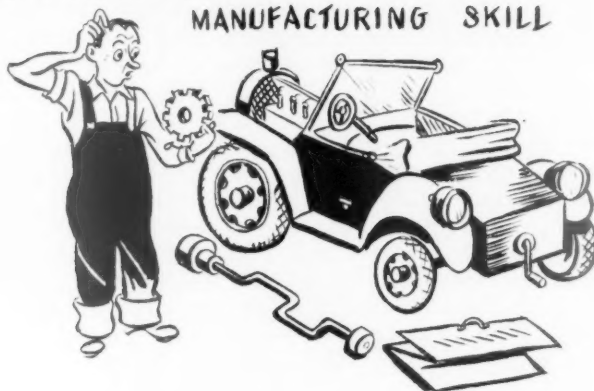
The effect of assigning class D items to a Commercial Division and of placing all "critical" components in a new class B under control of the proper Claimant Agency greatly reduces the impossible burden previously





THERE'S A WIDE DIFFERENCE IN

MANUFACTURING SKILL



placed on Industry Divisions. As CMP is now set up, the Allotment of all B1 and B2 items (a list which is growing steadily) by the Industry Divisions and the attempt to schedule all B1 and B2 items within the industry is too complex. It also involves a conflict of authorities. If Claimant Agencies let contracts and allot Controlled Materials on A products, they must also allot materials and control scheduling on all other "critical" components. Their control should include *everything* critical—money, men, materials and parts.

Requirements of Class A

We come now to Class A items, and in this all-important group certain facts must be carefully observed.

No part of an End-Product shall be a Class A item unless that end-product is so designated by the proper Claimant Agency and its description, contract numbers, and Prime Consumers specified. The purpose of the above is as follows:

- (1) Class A items should embrace 50% or more of the total available supply of Controlled Materials.
- (2) Items in class A should be already in mass production.
- (3) They should involve substantial quantities of Controlled Material.
- (4) Their design should be crystallized.
- (5) They should preferably be end-products which are produced by more than one Prime Consumer.
- (6) Bills of Materials of class A products should have an accuracy of more than 90% by check of net weight of total A and B parts used (including net estimate of class C and D parts) against scale weight of end-products.
- (7) No materials should be allotted to class A products on Summary Bills of Materials. Detailed Bills only should be used.
- (8) Separate Bills of Material should be gathered by separate Prime Consumers and compared by the Claimant Agencies and minimum and maximum gross weights set up for every class A part.
- (9) Class A products should, so far as possible, include all end-products of high military and strategic value. Examples of these are landing craft, tanks, half-track vehicles, airplanes, and perhaps 25 of the more repetitive types of radio and radar equipment.

No effort should be made to rush the class B products into the Class A group until all of the above nine conditions can be met.

As both Detailed and Summary Bills will list only Class A and B items, they will be submitted only to the Claimant Agencies. All A and B Allotments will come from the Claimant Agency concerned—and not from several sources as at present.

Some Class B items should, however, be translated into Class A items as fast as all these conditions are met. In this way it will be possible for each Claimant Agency to do a really accurate job of Allocation of Controlled Materials and a really accurate job of scheduling of all critical components. The result will be a complete and rounded production program and a careful and accurate Allotment of over half of the Controlled Materials. Another quarter will continue to be Allotted by the Claimant Agencies on Class B items in many cases on a horizontal basis. The final quarter of Controlled Materials will be Allotted by Industry Divisions (Class C) and the Commercial Division (Class D) entirely on a horizontal plant basis.

Vertical or Horizontal

It will be noted from the foregoing remarks that the writer recommends a complete reversal of the process presently used in classifying A and B products. For the present classification rests on the principle that all Controlled Materials flow vertically, on a contract basis *unless otherwise indicated*. A growing list of Class B items and the recent bifurcation of Class B into B1 and B2 are indications of the increasing difficulties that are being experienced with this artificial method of segregating vertical and horizontal.

In the writer's opinion these problems could be more easily resolved if we faced the situation realistically and rationally.

All men may be created equal, but all manufacturers certainly are not. It has taken the automotive industry many years to plan satisfactory work-flow schedules, collect good Bills of Material, and learn to keep those cars moving along the assembly lines without a hitch. In the course of thirty years they have reduced inventories, cut costs and increased production. Unfortunately we cannot teach effective scheduling overnight to every war contractor merely by issuing a Plan. And we cannot secure perfect Bills of Material merely by preparing forms.

The President of a large motor company with many war contracts recently said to the writer:

"Our business is built on accurate Bills of Material—they are one of its fundamental principles. Our Bills are 99.7% correct on the war items we produce and they include even the chemical analysis of the paint that goes on anti-aircraft guns and tanks; but it has taken over a year to collect them and we don't expect to have

over a year to collect them and we don't expect to have all of them completed until the Spring of 1943."

If we maintain a standard like that for our A products, vertical allocation will mean something and we will be standing on really firm ground.

And fortunately, more than half of all the Controlled Materials we use go into war items that are mass-produced on assembly line principles as sound as those of the automotive industry.

But we must not balance supply and demand of Controlled Materials by cutting down production. And that is the direction in which CMP—as now set up—is leading us. We must not force the Claimant Agencies to authorize "deflated" schedules in order to balance out against "inflated" Bills.

V. THE BILLS FALL DUE

IT must be understood to begin with that a bad Bill of Materials is worse than no Bill at all. There is a human tendency to accept figures at their face value, and this naturally leads to an assumption that anything submitted by a Prime Consumer with the words "Bill of Materials" at the top of it must be true. The same blind faith is certainly not placed in PRP applications at this time. It is desirable for this reason to clearly classify Bills of Materials into Class A, Class B, and Class C groups as set forth in the preceding chapter. For if we are to allot Controlled Materials on the basis of Bills of Materials that are inaccurate we will find ourselves rapidly between the horns of the following dilemma: either we will allot too much material on inflated Bills and end with a dislocation of production and an unnecessarily heavy cut in approved schedules; or we will allot too little Controlled Material on incomplete Bills of Material and will be unable to fulfill requests for additional Allotments, thus again disrupting production and returning to the chaos of improper Allotment which is what upset the Production Requirement Plan.

It becomes increasingly important therefore that we face the issue squarely. A Detailed Bill of Materials (at least 90% accurate) is the only basis under which vertical allocation will function as it is intended to function and as all of us hope to see the CMP plan function.

Introducing Some Variables

The CPC experiment illustrated this point very clearly. Two Bills of Materials were collected on an identical end product—an aircraft radio set. One of the Prime Consumers had been building this radio set for two years, the other Prime Consumer was building it from the drawings made by the first. Both were companies of the highest reputation for accuracy and honesty. The radio in question had a scale weight of 137 lbs. Both Prime Consumers agreed on this. And here is where their agreement ended. For when Prime Consumer No. 2 added up the net weight of all the parts in one complete set he got a net weight of 138 lbs. (99% accurate) whereas Prime Consumer No. 1 came up with a net weight for the unit of 185 lbs. or nearly 50 lbs. more than the radio actually weighed.

In their gross weights the two Prime Consumers were even further apart. No. 2 agreed to build the radio with 237 lbs. of material, in other words agreed that over 57% of all the material allotted to him would

For accurate Allotments flow only from accurate Bills. Material should not be flowed vertically until the Bill is accurate. Less waste of critical material will result from PRP than from vertical authorizations of Controlled Materials based on faulty Bills. Better to limit Class A at the beginning to our major contracts, our large volume producers, with Bills accurately arrived at. The hundreds of thousands of smaller products—a fraction of the total—to remain in Class B, C or D.

We must start with the known and work toward the unknown. Only confusion can result from an attempt to do everything at once. What is needed is an orderly progression into vertical allocation, not a handicap race where the devil takes the hindmost.

result in actual scale weight of the finished radio. No. 1 however needed 365 lbs. to build the same radio showing an effective net weight of less than 39%. In other words he wanted 50% more material to build the radio than Prime Consumer No. 2 required. To put it another way, Prime Consumer No. 2 agreed to build 3000 radios with the same amount of material that Prime Consumer No. 1 wanted to build 2000.

Now here is the point where the CPC experiment hoped to cast some light on Bills of Materials and set about trying to do so. At the request of the Claimant Agency both Prime Consumers sent their top flight men to Washington and went over those Bills of Material in detail. First they checked into the net weight discrepancies. Here is what they found.

Prime Consumer No. 2 got his 99% accurate net weight on his Bill by taking every part out of the radio and weighing it on a scale and arriving at the correct weight to three decimal places. No. 1 had the part suppliers fill out their own net weights. He explained the result as follows:

"Part suppliers were so shocked when they saw the gross weight of material which they required to make some of the parts that rather than cut the gross requirements they made their figures 'look better' by inflating the net weight of the part. In some cases the inflation of the net weight ran several hundred percent beyond its actual weight."

There were 96 part suppliers who served Prime Consumer No. 1 and many of their parts occurred from a dozen to a score of times in each radio. The result, as already stated, was a net weight 50 lbs. too high on a 137 lb. radio.

Conclusion of the CPC experiment was that net weights should be figured by Prime Consumers and written into the form before Secondary Consumers are asked for gross weight. This will at least make net weights uniform, and give a takeoff point for collecting a decent Bill of Materials.

Lessons of Experience

The two Prime Consumers now dug into the question of why their gross weights of required material were so far apart. Second discovery: Prime Consumer No. 2 had failed to include rejects. He had estimated manufacturing losses in the manufacturing department and had failed to consider rejection of parts by the production assembly department. And as this Prime Consumer made one third of the parts for the radio himself the

addition of 12% for rejects made quite a considerable difference in the total.

Third discovery: Prime Consumer No. 1 assembled the radio out of 1259 different parts and the gross requirements of nearly every one of these parts had been slightly inflated by the part supplier. Whereas in the case of Prime Consumer No. 2 he made over 300 of the parts himself and bought the remainder in a

only be set by comparison of requirements of one part supplier against those of another who makes the identical part. (In some cases the same part supplier supplied both Prime Consumers the same part and yet gave each of them a different figure for both gross and net.) A ceiling for gross requirements can only be set after careful study and comparison of identical Bills of Material part by part. This comparison can be made either

Form CMP-1 (11-18-42) UNITED STATES OF AMERICA WAR PRODUCTION BOARD SUMMARY BILL OF MATERIALS FOR CONTROLLED MATERIALS PLAN

BUREAU OF THE BUDGET NO. 13-8467-42 APPROVAL EXPIRES JUNE 30, 1943 Page of pages

Reporting consumer:

Address (street, city, State):

To: Enter Here WPB Industry Division or Company Requesting This Report:

Procurement item: Type: Model: Number of procurement items covered:

Line No.	Material (See CMP Material List)	CMP Code No.	Total Weight (Pounds)		Lead Time (No. of Mos.)
			Net	Gross (From Incl. Rejections, etc.)	

Form CMP-2 (11-18-42) UNITED STATES OF AMERICA WAR PRODUCTION BOARD DETAIL BILL OF MATERIALS FOR CONTROLLED MATERIALS PLAN

BUREAU OF THE BUDGET NO. 13-8468-42 APPROVAL EXPIRES JUNE 30, 1943 Page of pages

Reporting consumer:

Address (street, city, State):

To: Enter Here WPB Industry Division or Company Requesting This Report:

Procurement item: Type: Model: Number of procurement items covered:

Line No.	Drawing or Part No.	Part Name	Material Name	Specification or Chemical Analysis of Material	Size of Material	Weight (Pounds)		Number of Parts	Total Weight (Pounds)	
						Net	Gross		Net	Gross

Form CMP-3 (11-18-42) THIS FORM MAY BE REPRODUCED IN SAME SIZE AND FORMAT UNITED STATES OF AMERICA WAR PRODUCTION BOARD LISTING OF CLASS B—GROUP I PRODUCTS AND GFE FOR BILL OF MATERIALS FOR CONTROLLED MATERIALS PLAN

BUREAU OF THE BUDGET NO. 13-8501-42 APPROVAL EXPIRES JUNE 30, 1943 Page of pages

Reporting consumer:

Address (street, city, and State):

To: Enter Here WPB Industry Division or Company Requesting This Report:

Procurement item: Type: Model: Number of procurement items covered:

Line No.	NAME OF PRODUCT (List Only Class B—Group I Products and Government Furnished Equipment - GFE)	PART NUMBER (If Available)	QUANTITY REQUIRED (In Terms Specified On Class B of Material List)	LEAD TIME (Number of Months)

The whole success of CMP hinges upon the accuracy of the information listed on these forms

higher state of assembly with the result that he only purchased 600 parts which left less room for inflation of gross requirements.

Fourth discovery: Prime Consumer No. 1 had added up his total Bill of Materials by hand, an operation which involved a conference room full of people each taking down the monthly requirements of each shape of material for each individual part involved. On the other hand No. 2 had the whole job done on punched cards at a cost of \$500 and then had a proof run off of all his cards to eliminate duplications, of which there were quite a few.

We may conclude from the above that a ceiling is needed over gross requirements of Controlled Materials which a part supplier may ask and such a ceiling can

by the Claimant Agency or by the Prime Consumer acting through the proper Industry Division of the War Production Board or through their own trade association. I do not think we need to fear a tendency toward collusion on the part of Prime Consumers as they are as anxious as the Claimant Agency to minimize the gross amount of material required by their part suppliers. As it becomes necessary to cut schedules there will be a further tendency on the part of Prime Consumers to come up with the lowest gross requirements figure.

We may also conclude that satisfactory Bills of Material can only be arrived at by means of punched cards or other automatic tabulating machinery. This method also adapts itself to a change of material require-

ments for an individual part. As to scheduling, suitable studies of punch card equipment both for preparing Bills of Material and for controlling the flow of components have been designed, set up and operated under the Contract Production Control experiment and are available to any interested parties now operating under the Controlled Materials Plan.

It should also be pointed out here that Prime Consumer No. 1 completed his bill in 44 days, having as previously stated 1259 parts; whereas Prime Consumer No. 2 took 64 days to complete his Bill (the more accurate one) which included only 944 parts including those he made himself. From which we may perhaps conclude that Detailed Bills of Material cannot be rushed. At least 90 days should be allowed for gathering and checking a Bill of Materials for a Class A end product which involves 1000 or so Class A, and B, parts.

Averages Will Not Work

Average Bills of Materials or prototype bills of materials will not be satisfactory for allotting material for Class A products. To do so would mean to give the economical producer too much material for his part suppliers, the wasteful producer too little to complete the product. Even on the CPC experiment on the two aforementioned radio contracts there was a substantial difference in the material requirements for the production by Prime Consumer No. 1 and Prime Consumer No. 2 of about 2500 of the identical radios. Prime Consumer No. 2 needed about 320,000 lbs. less material to build his 2500 radios because his gross requirements were so much less for the same radio than were those of Prime Consumer No. 1. In addition to that 320,000 lbs. saved he also saved 125,000 lbs. which his part supplier showed as available from inventory.

And this brings us to a very important conclusion regarding Bills of Materials which the CPC experiment brought out. It is essential that the Prime Consumer use his best efforts to reduce gross material requirements for each contract as much as he possibly can by

getting the part supplier to contribute from his inventory as much material as he can spare for that particular contract. This is particularly true in the case of Bills of Materials gathered in the middle of a contract. Thus Prime Consumer No. 1 started from scratch on a new lot number for his 2500 radios. True he had built the same radio many times before during the preceding two years, but on the day that the CPC forms reached him he had received a Contract for approximately 2500 more of the same radio and he was ready to place purchase orders for the parts required to build them. Now most of these part suppliers were making those parts to order. They were special run parts. In other words they were Class B and Class C parts and they had no material available to fulfill these new purchase orders, or at least they said they had not. The result was that in most of the CPC 2 forms returned the column devoted to "Available from Inventory" was marked with a large goose-egg.

However, in the case of Prime Consumer No. 2 the case was entirely different. He started his Bill of Materials in the middle of a contract. His purchase orders had been out for some time. A certain amount of the material had already been secured for the completion of his orders and in some cases the orders for certain parts had been completely filled. That was how he picked up 125,000 lbs. of material already available to his part suppliers.

Now the moral of this is: a different type of Allotment must be made on contracts which involve schedules already in process of production. Failure to secure a credit for inventory already in on those contracts would be like forcing Mr. Average Citizen on December 15, 1942 to pay his income tax in full all over again and giving him no credit whatsoever for the quarterly payments which he had made on March 15, June 15, and September 15. Mr. Average Citizen would go bankrupt. And so will Mr. Claimant Agency if he fails to collect full inventory credit on all schedules which are in the process of completion.

VI. TIME LEADS THAT MISLEAD

BY Christmas Day of 1942, if everything has been run off according to schedule, the War Production Board and the Claimant Agencies should have arrived at a point of harmonious agreement in the classification of products (See Chapter Four) and Prime Consumers, holding contracts with Claimant Agencies, should have submitted their Summary Bill of Materials to these Claimants (See Chapter Five). Let us assume that these Summary Bills of Material have been put together with sufficient accuracy so that the listing of Controlled Materials in the forms and shapes specified exactly fulfills the requirements for the manufacture of one completed unit.

It now remains for the Claimant Agencies to arrive at an "approved" schedule of end-products and to set up exact requirements of each Controlled Material that they will need every month for the production of that "approved" schedule.

We have thus passed through the first three phases of the Controlled Materials Plan. Each period, as set forth in the plan, should cover about one month. The first period is devoted to separating the sheep from the goats, the vertical from the horizontal, the critical components from the non-critical components, and might be referred to as "The Period of Segregation".

The second period, involving the scurrying about for Summary Bills of Material and the compiling together of various scraps of information, might be called, "The Period of Compilation".

In the third period, these Bills of Material are extended and pro-rated to arrive at monthly requirements, and this might be known as "The Period of Extension".

Now, the Period of Segregation places the burden of the work on the War Production Board and the Claimant Agencies. The Period of Compilation falls on the shoulders of the Prime Contractors and their Secondary Consumers. This is the time when they must get out their slide-rules and weigh up their parts, estimate their manufacturing losses and rejects and guess at the Time Lead factors involved.

The Period of Extension is again the responsibility of the Claimant Agencies and it is here that the question of Time Lead factors is apt to prove misleading.

Let us take an example.

In a rough way it may be said that inventory (both raw material inventory and semi-finished parts) represent Time Lead minus Production Cycle. The equation reads as follows:

$$I \text{ equals } TL \text{ minus } PC$$

If it takes seven days to stamp out, drill and assemble a variable condenser for the radio industry, and if the sheet and rod involved in the operation are shipped to the assembler from the mill twelve weeks before the fully assembled variable condenser is sold by the part supplier, then (not counting shipping time from the material supplier to the material fabricator) the material will be in the supplier's plant as inventory for eleven weeks either before or after fabrication. The equation now reads:

$$I \text{ (11 weeks)} = TL \text{ (12 weeks)} \text{ minus } PC \text{ (1 Week)}$$

In the automotive industry we frequently see Inventory and Production Cycles reduced to days or even hours and the resultant Time Lead shortened to weeks or even days. Anything that attempts to interfere with this orderly process will stand in the way of the success of the Controlled Materials Plan.

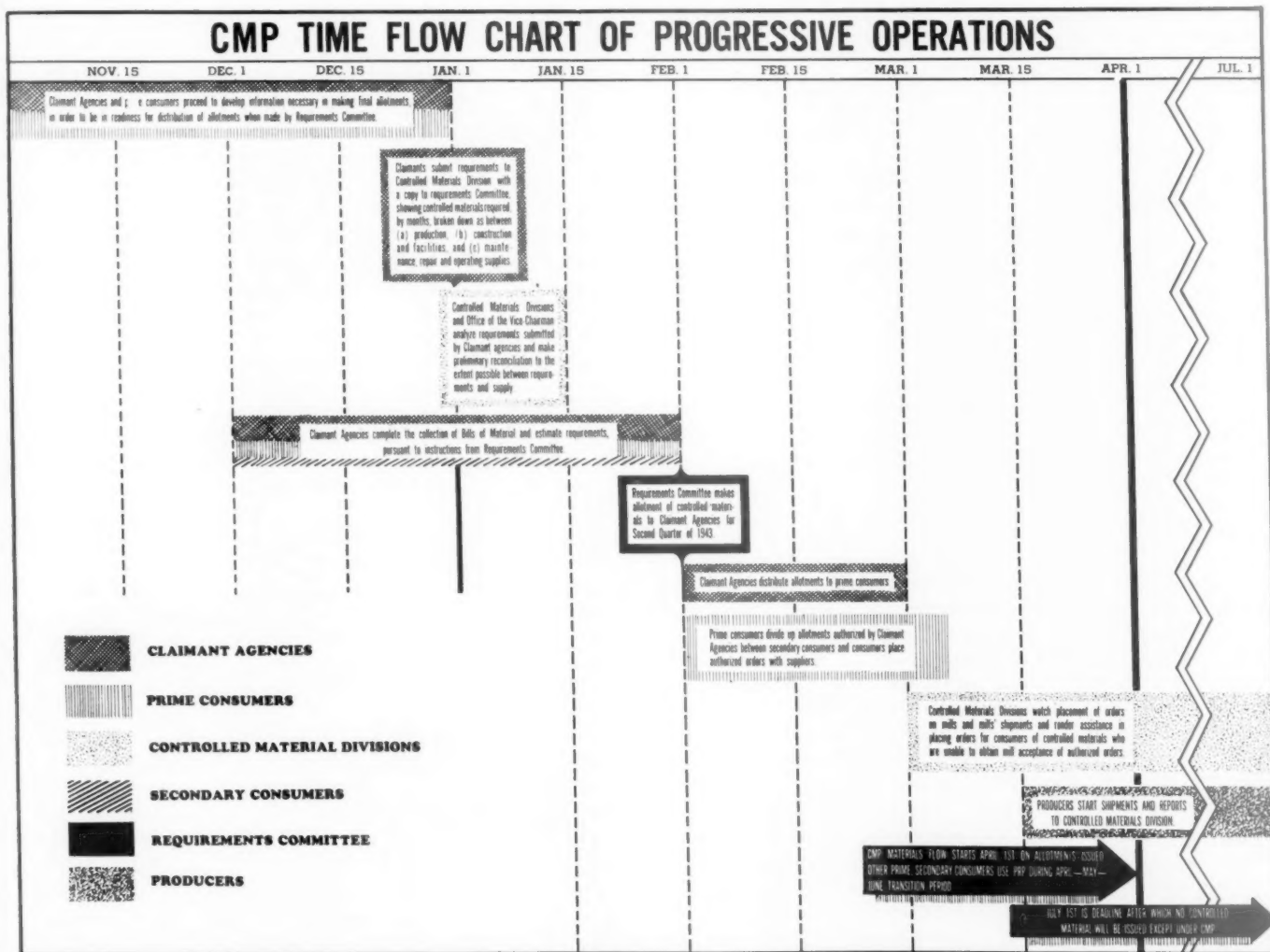
Under the Production Requirements Plan there resulted a gradual lengthening of Inventory. As a general average it stands today at 72 days. In other words, all of American industry, taken as a whole, has unworked material in inventory sufficient to carry it for ten weeks of seven working days each without any additional raw materials being brought into the plant. This statement, of course, is based on averages. It does not represent any individual plant or any individual project. Nor does it mean that the average plant has sufficient of *all* materials needed to work for ten weeks. It does, however, indicate a general tendency to pile up reserve

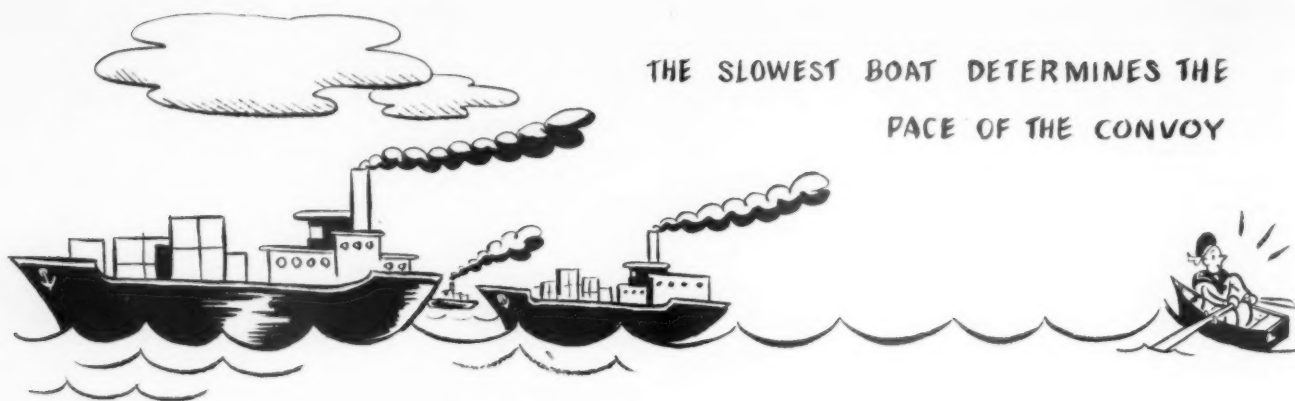
inventories, and this tendency was undoubtedly heavily stimulated by the growing scarcity of materials. It is exactly similar to the tendency noted in civilian life to pile up reserve inventories of coffee, sugar, nylon stockings and other articles as they become increasingly scarce and are about to be rationed.

Now, it is the hope of the Controlled Materials Plan that assurance of sufficient Controlled Materials to complete all approved schedules will stop this rush of material hoarders. Certainly there will be no purpose in any consumer purchasing more materials than he will use in any given contract since he will be permitted only to complete "approved" schedules. However, it is necessary that great care be exercised to avoid the accumulation of excess inventories through "involuntary hoarding". Let me explain what is meant by this phrase.

Involuntary Hoarders

Under the Controlled Materials Plan, as it is now set up, Time Lead factors are established on Summary Bills of Materials by the Prime Consumer and it is his duty to estimate the Times Lead factor for his Secondary Consumers. Now, to be on the safe side, he is going to ask for that material on the earliest possible date. Completion of his contract depends on his getting the material. Moreover, he has to have the material available at the earliest possible moment because he has to set his Time Lead against the slowest and not the fastest or even the average Production Cycle. So, when he asks the Claimant Agency for materials he is going





to take no chance at all of getting there with "too little and too late". This inflation of Time Lead may be compared to the speed of ships in a convoy. The slowest ship in the convoy sets the pace. In the same way, under the Controlled Materials Plan as it is now set up, the slowest Secondary Consumer involved in the contract sets the Time Lead.

Now, it is quite possible to speed up this convoy, to cut down the Time Lead, but is not possible to do this with the forms as they are at present designed.

Unless these Time Leads that mislead are made realistic, we are going to be confronted with a situation on July 1st, 1943, which might well stagger our war effort. For by that date every pound of aluminum, steel, copper and copper-base alloy is to be placed under the Controlled Materials Plan, and not one pound of these materials (with very small exceptions) will be

available to any user thereof except upon receipt of an Allotment.

Now if these Allotments are going to be based on "guesstimates" instead of estimates of Time Lead, we are going to face a run on the bank. It will be a case of "too much and too soon". We will be in the same position that an American citizen would be in if every bill he owed in the world became due and payable on July 1st. He is solvent. He is fully prepared to meet all of his bills as they fall due. But he has so scheduled his payments that they coincide with his revenue. He pays his income tax in quarterly installments. And his budget is set up to meet those payments on March 15th, July 15th, September 15th and December 15th. If he tries to pay more than a quarter of it on July 15th, Mr. Average Citizen will be overdrawn at the bank. And the same thing goes for CMP.

VII. PAPER PARADE

IN our desire to see the Controlled Materials Plan successful, we sincerely hope that simplification will be made in the paper work pattern as it is now set up. Failure to do so will make its operation look like those famous Fifth Avenue parades for returning heroes with ticker tape showers and pages torn from telephone books fluttering down in all directions.

For the paper parade of the Controlled Materials Plan proceeds somewhat as follows.

First: The Claimant Agency starts it off by writing to each of its Prime Consumers requesting that they fill out a Summary Bill of Material form showing the number of Class B-1 products required to complete one unit of the procurement item, that they indicate thereon a description of the item, its part number, its manufacturer, the number of said items included in one unit (including estimated rejects), and the Time Lead factor—estimated number of months that the component is required prior to final delivery of the procurement item into which it is assembled.

The Summary Bill of Materials also includes an estimate of all materials on the CMP Material List, whether they be Controlled Materials or Non-Controlled Materials that are required in Class A products manufactured or purchased by the Prime Consumer for inclusion in the Procurement item. It gives the material code number, the net weight and gross weight including rejects of all CMP materials. It does not indicate how much of this material is included in any one of the Class A products but lumps it all together. It does however indicate the Lead Time, that is to say,

the number of months ahead of final delivery of the procurement item when that material is required for shipment. As this Lead Time covers delivery from dozens of material suppliers going to hundreds or even thousands of Secondary Consumers, it would appear necessary to enter here the longest estimated Lead Time instead of the shortest.

Second: The Claimant Agency now studies the Summary Bills of Material from all of its thousands of Prime Consumers and estimates on its own form the total number of procurement items required and the months in which they will be required. Using the Lead Time set forth it figures out how much of each Controlled Material it will have to ask the Requirement Committee for in order to produce the approved schedule of these procurement items.

Third: The Requirements Committee weighs the demands of each of the Claimant Agencies against available supply and issues the Program Determination form to each Claimant Agency showing its quota of the three controlled Materials by months for a quarter year.

Fourth: The Claimant Agency now reconsiders its previously estimated schedules and where necessary cuts back to come within the quota granted them by the Requirements Committee. (Here again, inaccurate Bills of Materials and inflated Time Leads may throw their decisions way out of kilter.)

Fifth: The Claimant Agency now sends to each of its Prime Consumers from whom a Summary Bill of Material has been received, an application for an Allot-

ment Number to purchase controlled materials. On the face of this form they enter the approved schedule of procurement items showing the quantity to be produced each month, and in some cases the value in dollars of said products.

Sixth: Each Prime Consumer now completes his application for Allotment Number received from each of his Claimant Agencies, indicating the quantity of Controlled Materials and also of other CMP materials which he will require each month to complete the approved schedule shown on the face of the form.

Seventh: Presumably each Prime Consumer will, at this time, verify his Summary Bill of Materials, by forwarding to each of his Class A Secondary Consumers, an Application for an Allotment Number to purchase Controlled Material similar to the one which he has just received from the Claimant Agency. The face of this Application must show the quantity of items which the Secondary Consumer is authorized to deliver per month.

Eighth: No doubt each Prime Consumer will accompany these Applications to his Secondary Consumers with the usual purchase order forms or will have preceded them by his own purchase order forms, which now under CMP assume the nature of reservation orders.

Ninth: Each Secondary Consumer will likewise forward Applications for Allotment Numbers properly filled out by him on the face to each of the Class A Secondary Consumers under him, accompanied by the usual purchase order.

Tenth: Each of the Secondary Class A Consumers returns to his Secondary or Primary Consumer immediately above him the Application for Allotment Numbers to purchase Controlled Materials properly filled out on the reverse and showing both Controlled and Non-Controlled Materials required by months.

Eleventh: A separate form ought to be prepared either by Prime Consumers and Secondary Consumers or by the Claimant Agencies and the War Production Board to be used in connection with collecting the material required for the preparation of the Detailed Bill of Materials. This form will have to show name and address of Secondary Consumer, drawing or part number, part name, specification or chemical analysis of material, material code number and the net and gross weight (including rejects) in pounds for one part. It will also have to show the number of parts required for one completed procurement end-product or procurement item, the extended net and gross weights (including rejects) in pounds for this number of parts included in one completed end-product.

Twelfth: Secondary Consumers will collect the same detailed information from sub-contractors of Class A Products who supply them.

Thirteenth: Each Secondary Consumer will now collate the information collected on the forms set forth above in steps Eleven and Twelve and will prepare a Detailed Bill of Materials for his own sub-assembly, forwarding this on to the Prime or Secondary Consumer immediately above him.

Fourteenth: The Prime Consumer will now compare the total net and gross weight of Controlled Materials shown on his collated Detailed Bill of Materials against the estimate made by him to the Claimant Agency on his Summary Bill of Materials (step One).

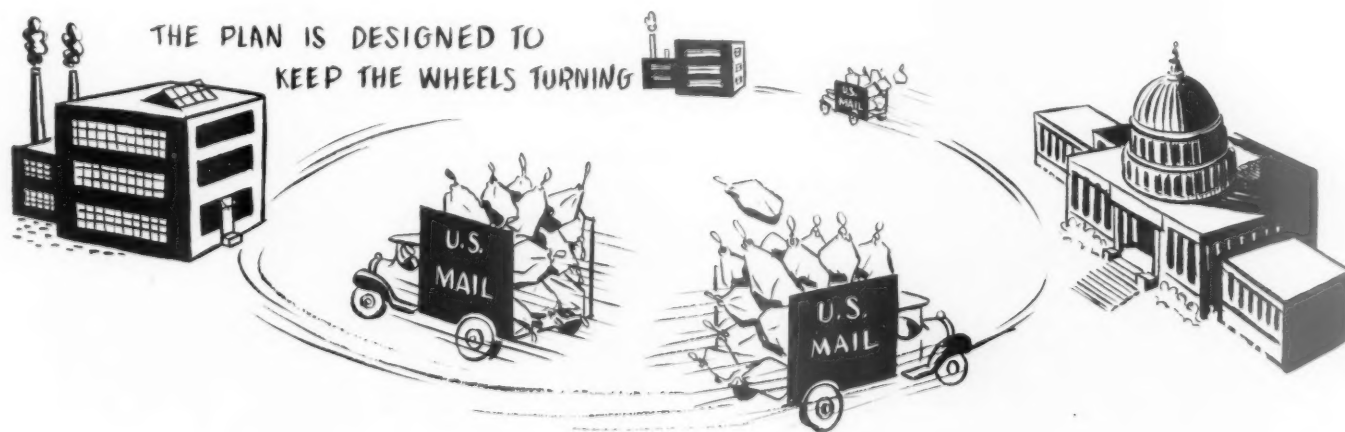
Fifteenth: Presumably each Prime Consumer will now prepare and forward to each Claimant Agency served a revised Summary Bill of Materials perhaps attaching thereto the Detailed Bill of Material. At the same time he will return the Application for Allotment Number to purchase Controlled Materials. These requirements should now jibe with the revised Summary Bill of Material and Detailed Bill of Material. They may not, however, tally with the requirements set forth on the original Summary Bill of Materials upon which the Claimant Agencies based their demands to the Requirements Committee.

Sixteenth: As a result of the discrepancies brought out by the Detailed Bill of Material and the Application for Allotment to purchase Controlled Materials now received by the Claimant Agency, said Claimant Agencies will be obliged to make a third revision in many of their schedules. If the Controlled Materials applied for are less than estimated from the first Summary Bill, they may wish to increase the Prime Consumers' schedule. If they are more than the estimate, they will doubtless have to cut the schedule. In either case, a revised Application form will have to be filled out by the Prime Consumer and all of his Secondary Consumers.

Seventeenth: When the re-revised and finally authorized schedule based on an accurate Detailed Bill of Material has been finally set up, Applications will be approved and charged against the Prime Consumer's account on the books of the Claimant Agency.

Eighteenth: As each Allotment Number is issued, each Claimant Agency must notify the Requirements Committee within twenty-four hours of the amount of the Allotment as to each of the Controlled Materials and the months during which they are allotted.

Nineteenth: The Claimant Agency must also forward to the Prime Consumer the form called "Assignment of Allotment Number and Authorization to Purchase



Controlled Materials." The Claimant Agency must here decide whether this Allotment Number will be for three months only or for the life of the contract. In the latter case they may wish to make a further cut in the approved authorized schedule as the Claimant Agencies are not authorized to issue Allotment beyond the current quarter except on a decreased percentage of their current quotas. These percentages are: 80% for the quarter immediately following that for which the Allotment has been established; 60% for the next following quarter and 40% for later quarters. So, granting a full Allotment for certain Prime Consumers throughout the life of their contract, thus enabling them to place their orders early, will necessitate no Allotments at all or materially cut Allotments for other Prime Consumers not so favored in order to remain within the budget above set forth. Where future quarter cut backs are made from the Application Schedule, it will be extremely difficult for the Claimant Agency to adjust the Allotment against the cut back schedule since varying Time Lead factors complicate the ratio of the cut back as between end-product schedule and material Allotment.

Twentieth: However, let us assume that the finally approved production schedule on the Authorization form happily coincides with the anticipated production schedule on the Application form. Then the Prime Consumer will not have to send out revised purchase orders and revised Application forms, but can now proceed to extend the Allotment. This he may do through the use of an Extension of Allotment form, which he signs and mails to each of his Class A Secondary Consumers. This form will repeat all of the information already collected from these Secondary Consumers and will merely advise them of the Allotment Number under which their purchases are to be made.

Twenty-First, Twenty-Second, and Twenty-Third: Prime and Secondary Consumers are now ready to place orders on material suppliers and for this purpose three forms have been designed, Steel Purchase Authority, Copper Purchase Authority and Aluminum Purchase Authority. Three copies are prepared of each of these forms and forwarded by each of the Secondary Consumers to their material suppliers together with their usual purchase orders.

Twenty-Fourth, Twenty-Fifth, and Twenty Sixth: One copy of the Steel, Copper and Aluminum purchase orders is now forwarded by each of the material suppliers to the appropriate Controlled Materials Division of the War Production Board, after the suppliers have entered thereon whether the order was accepted or rejected. Presumably the Prime or Secondary Consumer is also notified by the supplier whether his order

was entered or rejected. In the event of rejection, the Consumer may have further recourse to the Controlled Materials Division in an attempt to have the Claimant Agency schedule his order directly on another supplier or a warehouse.

Twenty-Seventh: Quarterly inventory reports made by each Primary and Secondary Consumer on iron and steel.

Twenty-Eighth: Quarterly inventory report is made by each Primary and Secondary Consumer on copper and copper base alloy products.

Twenty-Ninth: Quarterly inventory reports are made by each Primary and Secondary Consumer on aluminum and magnesium products.

Thirtieth: Quarterly inventory report made by each Primary and Secondary consumer on other critical materials.

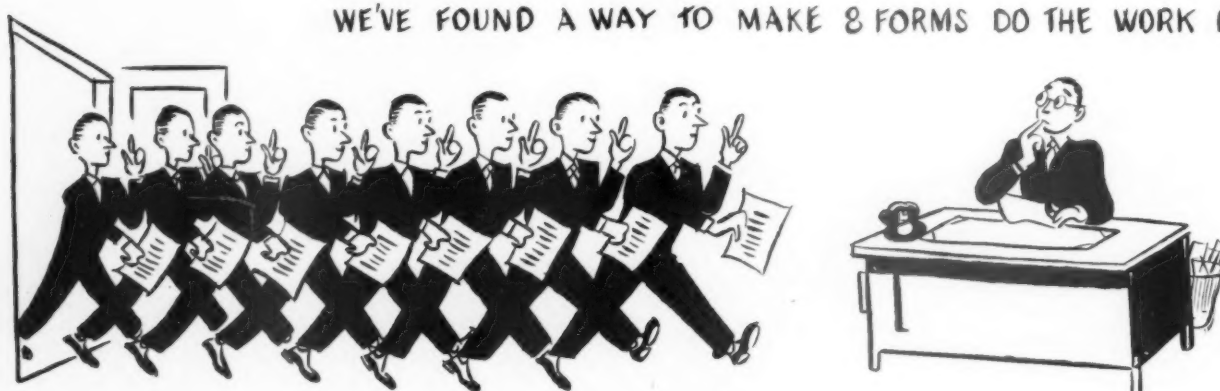
There's a Simpler Way

Experience with the Contract Production Control experiment has established the fact that considerable reduction of the aforementioned paperwork is possible. The CPC plan used only two basic forms. CPC-1, the Prime Consumer's form, on which the Claimant Agency entered the proposed or existing schedule of end-products.

CPC-2, the Secondary Consumer's form, attached to purchase orders for component parts. The purchase order was filled out by the Prime Consumer in the usual manner and for the full number of parts required by his contract. In accepting the purchase order, the Secondary Consumer attached thereto a copy of CPC-2, which specified his promised delivery date, net and gross quantity of materials in one unit, amount of material which he had available from inventory and the months in which he would require the balance.

Prime Consumers then totaled CPC-2's (preferably by the punch-card method), filled in the total inventory and the total monthly requirements of the entire contract on the face of CPC-1, signed it and returned it to the Claimant Agency.

If the Claimant Agency, upon learning the exact detailed monthly requirements for the completion of the existing or proposed schedule, were not disposed to allot the entire amount of material, they merely entered in the bottom of each monthly column on the face of CPC-1 the percentage of said material which they were willing to allot and the schedule of deliveries of the end-product was cut accordingly. The authorized signature was then affixed to the bottom CPC-1, which was immediately returned to the Prime Consumer, bearing the Allotment Number and the preference rating assigned to it.



The Prime Consumer thereupon rubber-stamped the same Allotment Number, preference rating and his own signature on each of the CPC-2's and entered the same authorized percentage under each month. Return of this CPC-2 to each Secondary Consumer was all the authority he needed to purchase under the Allotment Number shown the approved percentage of Controlled Materials granted monthly throughout the contract.

This he did by issuing his regular purchase orders to the Controlled Material suppliers and rubber-stamping thereon the Allotment Number and a certification that his order did not exceed the amount of material

allotted, that it was not purchased earlier than authorized, and that it would all be consumed in producing specified contract.

In this way these two forms took the place of the Summary Bill of Materials, the Detailed Bill of Materials, the Application for Allotment Number, the Authorization to Purchase Controlled Materials, the Extension of Allotment, the Steel Purchase Authority, the Copper Purchase Authority and the Aluminum Purchase Authority. These two forms also collected much of the information required on inventory and provided realistic Time Lead factors.

VIII. MARS - THE UNPREDICTABLE

C LAIMANT AGENCIES, like women, have the right to change their minds. War is unpredictable and designs that were good enough for the Spring will certainly be outmoded by Summer.

The plane assembly plant consumes its miles of drafting paper every month with changed designs that could not be foreseen. Mars pays the piper and the tune he calls is apt to be recalled in the middle of a bar.

How then are we to tackle the problem of design changes? Surely, not by allowing the Controlled Materials Plan to become so crystallized, so cut-and-dried that every changed requirement calls for a new Application, a new Allotment and a new series of Extensions of Allotments.

Under the Contract Production Control plan, the Prime Consumer was allowed a 5% leeway on his Allotment. If changing conditions made it essential for the Prime Consumer or one of his Secondary Consumers to have a little more material or to have it a little sooner than he first requested, it was not necessary to have recourse to Washington. The Prime Consumer increased the Allotment of the Secondary Consumer, provided that said increase did not exceed 5% of the Prime Consumer's total allotment of that type of material.

Now since this increased requirement of one Secondary Consumer was probably offset by decreased requirements of other Secondary Consumers, this gave the Primary Consumer considerable latitude and made the number of cases requiring reference to Washington almost negligible.

Flexibility Is Essential

There was another leeway granted to the prime consumer—he was allowed to substitute a less critical for a more critical type of the same controlled material. Thus he could substitute copper sheet or strip for copper tubing, or carbon steel for alloy steel, or aluminum wire for drawn aluminum rod. In this way if he happened to underestimate total requirements of one particular type of Controlled Material, he could substitute another shape or type of the long material to make up the shortage of the short material provided both fall within the same Controlled Materials division and provided, as aforementioned, that a more critical material was not substituted for a less critical one.

This latitude calls for a 5% reserve on the part of the Claimant Agencies and actual practice will soon develop just how many Prime Consumers are obliged to avail themselves of this full 5%. It is quite likely that in actual practice a reserve of 1% or 2% will be

sufficient. The amount of paperwork saved, the speeding up of production, more than justify this small reserve.

Furthermore, it would not result in a waste of material, but actually in economy of Controlled Materials. Because the time delays involved in getting the few extra pounds via Washington means the tying up of much larger quantities of Controlled Materials waiting for the one that is short. The leeway, granted even at a cost of a couple of percent as a reserve, means that all material will move forward simultaneously.

This latitude, however, must not be extended to the Secondary Consumer. It is essential that the actual order on the mill *must not exceed* the amount allotted under the Prime Consumer's Allotment. Nor must that order anticipate by even one month the Authorization to purchase. The leeway in other words is localized in the hands of the Prime Consumer as an aid to his Secondary Consumers and as a means of keeping production moving faster and avoiding unnecessary paperwork.

This practice will also encourage the Prime Consumer not to pad his Summary Bill of Materials, but to report only the actual requirements of his Secondary Consumers and his own.

Taking Up the Slack

Under the Controlled Materials Plan the Claimant Agency is allowed to issue Allotments for 5% more than it receives from the Requirements Committee. In other words, the Claimant Agency can issue Allotments for 105% of its quota. This is done to take up any possible slack and to keep the mills working at full capacity. Thus, a reserve is already provided for the necessary 5% leeway and all that the Claimant Agencies have to do is to allot only the quota granted to them by the Requirements Committee and they will know that they are within their quota even if every one of their Allotments is extended by every Prime Consumer to the limit of his 5% leeway.

Proper operation of the Controlled Materials Plan necessitates a prompt adoption of methods by which the Prime Consumer can be notified by their Secondary Consumers of under-ordering, and thus enable the Prime Consumers to notify their Claimant Agencies wherever the total consumption of the entire contract has run less than the entire amount of Controlled Materials allotted to them. This notification must be rapid and effective if the Controlled Materials Plan is to operate with maximum success. For, as has been pointed out in an earlier chapter, there will be a tendency—at least at the beginning—to exaggerate the

gross requirements of each contract both as to quantities of material required and as to dates on which it is needed. There will also be a tendency for Secondary Consumers and even Prime Consumers to hold this material in reserve until the very last minute to protect against unforeseen circumstances.

The result of such action will be to deprive other Prime Consumers of the needed materials and, ironically enough, to deprive the very Prime Consumers who are holding back material for one contract from using it on another contract from the same Claimant Agency.

Therefore, redistribution of the Controlled Material Allotment does represent a very critical step at least in the early stages of the Controlled Materials Plan.

Particularly in cases where Allotments have been made based on Summary Bills and without the necessary supplementary information from a Detailed Bill of Material, it should be obligatory on the part of the Prime Consumer to notify the Claimant Agencies promptly of any undistributed Allotment.

The Production Goal

It must always be borne in mind that merely balancing supply and demand is not a sufficient objective for the Controlled Materials Plan. Had the balancing of supply and demand been the only objective, this could more easily have been arrived at by a direct cutting of schedules by all Claimant Agencies. Refusal of Claimant Agencies to accept or pay for end-products in excess of these cut schedules would have rapidly reduced Prime Consumers' demands for Controlled Materials and quickly balanced supply and demand in a most effective manner.

We must remember therefore that the Controlled Materials Plan is endeavoring to balance supply and demand by less ruthless methods. Its main objectives may be set forth as follows:

- First:* To determine the relative requirements of all Claimant Agencies.
- Second:* To determine the relative importance of each end-product within each Claimant Agency.
- Third:* To determine manufacturing capacities of each Prime Consumer in relation to each Claimant Agency.
- Fourth:* To determine component bottlenecks and to schedule those critical components to conform to the urgency of the end-product.
- Fifth:* To determine the *minimum* amount of Controlled Materials required to fulfill each end-product.
- Sixth:* To determine the *latest* moment when that Controlled Material may be supplied and still meet schedules.
- Seventh:* To meet these *minimums*, so that supply will cover the *maximum* production.

We are far too apt to lose sight of the fifth, sixth and seventh points and to conclude that the main objective of CMP is merely to balance supply and demand. This is the type of thinking which inspires the collection of prototype Bills and which labels with the dignified name of "Bill of Material" any sheet of paper bearing guesses as to quantity of material contents. This is the type of thinking which encourages further guessing as to Lead Time, thus piling up huge voluntary and involuntary stock piles of Controlled Materials. This is the type of guessing which causes head on collisions between the War Production Board and the Claimant Agency in control of critical component parts. This is the type of guessing which attempts to apply vertical allocation too fast and too faultily.

We must remember that the Production Requirements Plan suffered from trying to do too much too

fast. We must not see the Controlled Materials Plan suffer from the same Washington disease, a disease contracted by sudden changes—from total inactivity to hectic action, from palsied procrastination to cosmic confusion. We have a natural tendency in government sometimes to swing widely from one extreme to another. Thursday's "directives" become Friday's "freezing orders."

Assembly Line Methods

Let us avoid making that mistake under the Controlled Materials Plan. Let us rather select mass-produced assembly-line products consuming large quantities of material, end-products like tanks, half-track vehicles, airplanes of certain types, landing craft, ships of certain types. Let us not bite off more than we can chew and digest. Let us rather take that half of our war production which is mass-produced, and place it under the Controlled Materials Plan with good Bills of Material, accurately collected and checked, rather than attempt to gather bad Bills on everything at once.

By concentration on the large, mass-produced products, good Bills of Material can be collected representing over 50% of all Controlled Materials demands. These Bills carefully allotted and scheduled will guarantee full production. The balance, meanwhile, of hundreds of thousands of minor items—far greater in number but less in total tonnage—will continue mostly under horizontal allocation until they can be brought one by one, in the order of their importance and weight and size, to the point where good Bills of Material and scheduling procedure can follow in orderly process.

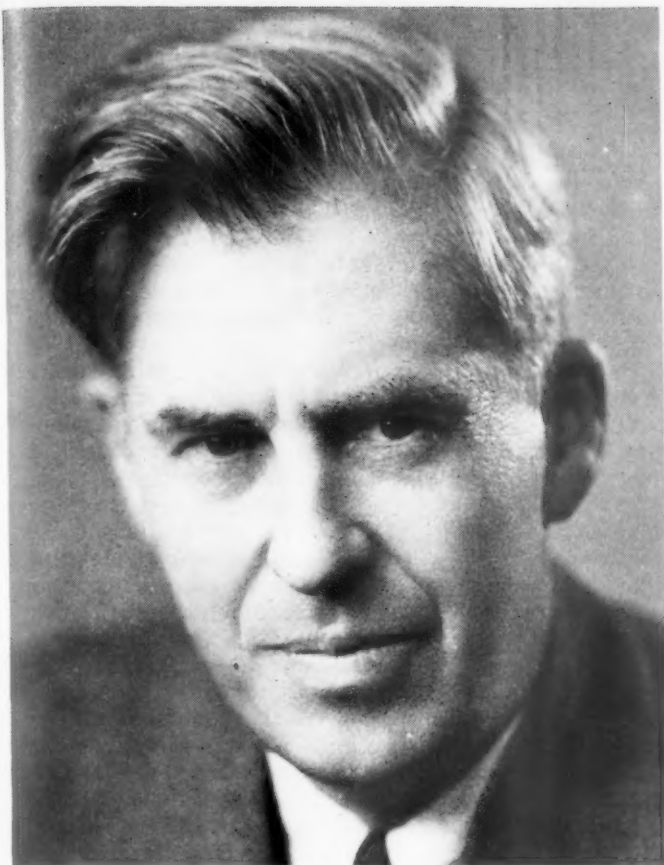
A Practical Example

Take, for example, the Army and Navy radio production programs. They total more than three billions of dollars, involve more than two thousand separate contracts and include many hundreds of different types of transmitting, receiving and detection equipment. Some of those contracts call for only two units and some for tens of thousands. It is just as hard to prepare a good Bill of Materials for the contract that covers the two units as for the one that covers the fifty thousand. Probably harder, for there will be more changes made during the production of the small order than during the production of the large one.

Out of those thousands of contracts and hundreds of models only a dozen types are important enough to call for a Bill of Materials. For those models—eleven by actual count—involve a billion dollars worth of business and over one third of all the Controlled Materials used by the entire radio industry.

Those eleven radios should be listed in Class A and their critical components in Class B. Each manufacturer producing one of those eleven should be obliged to produce a Detailed Bill of Materials. He should collect the details at the beginning of a new order (there are new orders every few months) at the time that he sends out his purchase orders. He should insist on the maximum possible contribution from inventory. He should insist on accuracy in his suppliers' statements of their gross requirements. He should assure himself that their Time Leads are as short as each individual case will permit. Before adding up his Summary Bill of Materials he should check every figure—and it should be totaled mechanically on punched card machines (which should be made available to these selected Prime Consumers) in order to avoid error and to provide for future changes by the substitution of new cards. When

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Vice President Henry A. Wallace, who as chairman of the Board of Economic Warfare directs strategy of purchasing from abroad.

PURCHASING is a WEAPON

The Board of Economic Warfare uses purchase orders to make and keep friends, procure war materials, and prevent the Axis from obtaining such supplies

By A. N. WECKSLER

PURCHASING has developed as an integral part of global war strategy. Just as ships, tanks, guns and men must be considered as expendables in offensive warfare, money and goods likewise are being expended as weapons.

This concept is a sharp departure from pre-war policy. While our Government then engaged in extensive purchasing from foreign countries to build up stockpiles of strategic materials, prevailing market prices and accepted banking practices were considered important, if not paramount, factors.

Critics of the pre-war stockpiling program maintain that the conservative purchasing policies followed by the Government prior to Pearl Harbor and immediately thereafter limited the tonnage acquired. This criticism

led to creation of an economic high command to control import and export policy.

The Board of Economic Warfare was charged with establishing policy in the field of foreign commerce. Major change was establishment of the principle that purchasing of materials must be considered as a direct war function.

Purchase of materials from foreign countries was directed to three broad objectives:

1. The purchase of strategic materials required in war production.
2. Support of the economy of allied and friendly nations.

Milo Perkins—successful in industry and in various Government posts—is executive director of BEW, responsible for export control, import programs and economic warfare analysis.

Hector Lazo, a native of Guatemala, and an inter-American authority, heads the BEW Office of Exports. He has had wide industrial experience in the export-import field.

Import program is administered by Morris S. Rosenthal. Prior to association with the Government, he was vice president and director of Stein, Hall & Company, importers.





Strands of roselle fiber grown at the agricultural experiment station in El Salvador.

3. Preclusive buying of war materials from neutral nations to prevent the Axis from obtaining these materials.

Purchase of materials to meet war production requirements are made in the basis of a tabulation of needs prepared by the War Production Board. WPB transmits to the Board of Economic Warfare a list of the materials needed, and the quantity.

The board decides from which country the purchases shall be made, and issues directives to an existing Government agency to make the purchase. It is significant that while all imports into this country are now controlled by the Government, it is the policy to use existing private export-import agencies, both in the foreign country and in this country, whenever possible.

In some instances, the Government acts as the purchasing agent in the country of origin—as importer and seller—but in most cases, the Board of Economic Warfare authorizes a factor in the trade to make the purchase. When an ocean haul is involved, the Government will often buy the material at a fixed price, arrange for transport, and then resell the material to the

United States fabricator at a price which permits resale under the Office of Price Administration ceiling price, absorbing any loss traceable to the high cost of war-time transport.

Essentially, the Board of Economic Warfare operates to purchase from abroad raw materials needed in our war effort, at a price level sufficiently high to encourage maximum production.

In some instances, the Board of Economic Warfare must first develop the resources, and then arrange for purchase. As in the case of some crude rubber development projects, the venture might not be justifiable as a business venture, but is wholly a war measure.

Another phase of the purchasing program is the necessity of insuring maximum production of a strategic material within a foreign country. At first thought it seems wholly inappropriate that this country concern itself with the labor conditions under which materials are to be produced in a foreign country for our account. Nevertheless, a careful consideration of the facts involved lends some merit to this procedure.

First, it must be recognized that to maintain the status of a democratic nation, it is necessary that our policies do not foster exploitation of foreign labor. But of a more practical concern is the fact reported by BEW officials that if labor does not receive an adequate wage, production drops off sharply. The economic systems of some of the countries from which we are purchasing strategic materials have fostered extremely low standards of living, and the BEW feels that if war-time prices are to be paid for materials, some benefit should accrue to the labor that produces the materials, for the dual purpose of promoting good will among the natives of the foreign nations, and to provide an incentive for top production.

To insure certain minimum labor standards, BEW includes a "labor clause" in contracts, specifying minimum wage levels, sanitary and working conditions, as required by the labor laws of the individual country.

The funds for all purchases are expended by any one of several Government financial agencies. The Reconstruction Finance Corporation or one of its subsidiary companies (Defense Plant Corporation, Rubber Reserve Company, Metals Reserve Company, Defense Supplies Corporation and the Export-Import Bank) handle most industrial materials. The Commodity



Cocoa beans from Guatemala provide ingredients for confectionery industry producing emergency rations for U. S. armed services.

Manganese ore mined in Brazil, to be routed into U. S. war production.

Credit Corporation of the Department of Agriculture finances purchases of agricultural commodities.

The U. S. Commercial Company, an RFC subsidiary, is used to purchase materials in the preclusive buying program.

In the purchase of strategic materials, three methods are used. In some instances, the importers buy for the Government agencies. In other cases, the BEW makes the purchase through the Government finance agency best suited to make the transaction without recourse to private buyers or through appointment of such buyers as Government agents. The third method does not place any responsibility on BEW. However, through the WPB Order M-63, Government exercises a large measure of control by regulating imports and shipping space.

A more detailed description of three methods of purchase follows:

1. The "hides" method of purchasing—under which importers buy for BEW—was originally developed as a price device; the intention was for the United Kingdom and the United States to set themselves quotas and prices at which they would procure hides in the Argentine and other South American Republics. This required coordinated buying on the part of the United States, and accordingly importers of hides buy for account of the Defense Supplies Corporation, which, with WPB approval, resells to the importer, or to an American tanner. In effect, the Defense Supplies Corporation washes itself out of each transaction, and actually has a "no-recourse" clause in its contracts with the tanners. This device is eminently suitable where it is not desired to physically stockpile the goods; where price control is desirable, or where the selection of quality and grades is a highly technical and peculiar problem. There are a number of variations of this technique.

2. Purchase directly by governmental agencies is a procedure which is self-explanatory, and is now in practice through the Defense Supplies Corporation, Metals Reserve, etc. The details of the buying, whether through Government representatives, appointment of importers as agents, or otherwise, may vary from case to case.

3. The exemption method is a method commonly employed by WPB at the present time to permit continued importation where Government machinery is not set up, where the commodity itself is not sufficiently



crucial or important to warrant Government control, where procurement will be carried on more vigorously by persons operating for their own accounts, or where questions of grade and quality are very important.

Policy considerations which are taken into account in making decisions as to how to procure each commodity are:

1. Generally speaking, it is the policy of the BEW to preserve importers' connections wherever possible unless the preservation of these connections will interfere with the execution of procurement programs. Consequently where the use of the private exemption method, or the "hides" method, is feasible, it is to be preferred to procurement by government agencies, and where a Government agency must be the sole procurement agency, existing importers should be employed as agents of the Government wherever possible, the BEW holds.

2. In using existing importers, whether privately or as Government agents, an attempt is made to divide the business among them equitably in line with their previous record of imports.

Continued on page 222

Primitive source of a product used widely by workers in U. S. war plants. Chicleros in Guatemala, their handiwork destined for the familiar pack of chewing gum.





"To put it bluntly, Mr. Funk, I've hired you to help me with my worrying
—I've no time for it any more!"



BASIC PRINCIPLES of PURCHASING

I. THE PURCHASING FUNCTION IN INDUSTRY

CENTRALIZED purchasing is a development of modern large scale industry, where the size and complexity of operations demand a segregation of the various responsibilities, handled on a departmental basis and coordinated under general management for the efficient operation of the enterprise as a whole. Management has long recognized the separate nature of the sales function, the production function, and the financial or accounting function—this three-way division of responsibility representing the simplest pattern of industrial organization.

But this simple pattern is by no means final; it is only the first step toward an adequate organization based on a recognition of the various factors and responsibilities involved in carrying on a business. In large and well organized companies today, we find separate departments and specialist executives devoting their entire time and attention to such varied activities as purchasing, advertising, sales promotion, personnel, credit, traffic, stores, public relations, design, research, inspection, power, maintenance, production planning, cost accounting, and the like. The existence of a purchasing department, directed by a responsible purchasing officer, represents the logical application of this basic management principle of the functional approach to industrial organization.

Many of the functions listed above are closely inter-related, and where the size or nature of the enterprise does not warrant such an extensive managerial staff and such complete division of responsibility, it is common to find two or more of these functions grouped under one executive. For example, the functions of sales management, sales promotion and advertising may be handled in a single department; or the functions of the comptroller, auditor, credit manager, and accountant may all be included in the responsibilities and under the direction of the treasurer or finance officer.

Similarly the purchasing department may or may not include responsibility for stores, salvage, inspection, traffic, and inventory control, all of which are related to

the general responsibility for materials. There are no hard and fast rules governing industrial organization. It must be flexible enough to serve particular conditions. The nature of the business and the qualifications and competence of individual executives have an important influence on the organization plans of any given company. It may be stated as a general principle, however, that in any manufacturing operation with an output valued at a million dollars or more annually, it is efficient and economical to maintain a separate purchasing department, charged with the specific responsibility of procurement. A comparable volume of purchases in the operation of service industries, institutions, or governmental units, indicates the advisability of a similar purchasing organization.

In centralized purchasing, the department head is customarily known by the title of Purchasing Agent. This traditional title reflects the legal status of the purchasing officer in relation to his company, indicating his authority to make contracts and financial commitments on behalf of the management and providing a legally sound signature for the purchase order. For this reason the designation is likely to persist, in general usage. Increasingly, however, the executive nature of the procurement function is being emphasized by such titles as Director of Purchases, Manager of Purchases, Manager of Materials, etc., which are coordinate with such titles as Sales Manager, Advertising Manager, Plant Manager, Credit Manager, and the like. In many cases where this is done, the title of Purchasing Agent is still used for the head of the actual buying staff of the department.

Though sometimes loosely classified as among the non-productive functions of industry, purchasing is actually and historically most closely related to production itself. Procurement of materials is the first step in production. The need for making a purchase generally arises in the first place from the production program. Quality considerations are determined by product requirements and operating conditions. The coordination

of purchasing and production must be very close in the interests of smooth, uninterrupted and efficient operation.

In some companies—about 20%—the Purchasing Agent reports to a production executive, a practice reflecting earlier and simpler methods in effect before purchasing was set up as an independent function. To a much lesser degree—about 5%—Purchasing Agents report to financial officers such as the treasurer or comptroller, on the principle that the act of purchasing represents the expenditure of company funds or, more accurately, their investment in materials. In the great majority of companies—about 75%—the Purchasing Agent reports to a general management executive such as the president, vice president, general manager, or executive committee, indicating the recognition of purchasing as a distinct and important function in itself, which should be regarded separately from both production and finance to the extent that purchasing policies may not be unduly dominated by either of these viewpoints. In a considerable number of cases, and the number is steadily increasing, the purchasing executive himself has the rank and title of Vice President in Charge of Purchases, and a correspondingly influential voice in the formulation of overall management policies.

Purchasing Prerogatives

Beyond the specific allocation of responsibility for a particular job, the purpose of functional organization is two-fold. First, it encourages the development of specialized skills, in both knowledge and technique, and allows undivided time and attention to be applied to each phase of management, resulting in better performance. Purchasing, for example, can be done far more scientifically and efficiently in a department properly set up, equipped and trained for the purpose, than if it is done as a secondary or incidental responsibility of the plant manager or treasurer. At the same time, the segregation of this function makes for better performance in the production and finance departments by allowing undivided time and attention to be applied to these problems, and by relieving production and financial executives of the interruptions, interviews and detail attendant upon procurement work.

To secure these two advantages—affecting both purchasing and other departments—it follows that the lines of authority must be drawn parallel to the lines of responsibility and must be strictly observed. On matters of mutual interest affecting two or more departments, such as specifications which concern engineering, production and purchasing, the decisions are arrived at through consultation and by mutual consent after all viewpoints have been given full consideration. But on factors which are distinctly within the province of one department, decisions are the prerogative of that department alone, and the best cooperation and the most effective company policy is non-interference.

The prerogatives of the purchasing department include:

1. *Selection of the supplier.* Specifications should not only define the qualities of a product, but should be so written as to permit procurement from alternative sources. Competitive products may be submitted for trial and approval by production and engineering departments if such procedure is deemed necessary or desirable. Good interdepartmental relations may be fostered by such a policy, and potential sources of friction or misunderstanding eliminated. But once a vendor or his product has been placed upon the approved list, indicating an acceptable source of supply, the decision

as to placing business with any given supplier or procuring any one of the alternative materials adjudged as satisfactory for a purpose, is completely a purchasing responsibility.

Specification by brand name only, restricting the choice to a single supplier, is not regarded as good purchasing practice or in the best interest of the company, though the specification of "(Brand name) or equal" is a common and satisfactory method, tying in with the development of an approved list as described in the preceding paragraph. The mention or record of the brand or supplier used on the previous order, when making out a purchase requisition, is frequently of real assistance to the buyer but is not regarded as a purchase instruction. Extensive analysis of purchasing practice shows that when requisitions are made out only by brand name, the Purchasing Agent may and frequently does exercise the privilege of disregarding that suggestion and awarding the order to the vendor of his own choice. Purchasing departments are created and maintained by management to make these decisions, and few managements are so inconsistent and short-sighted as to negate their own organization policy by withholding authority commensurate with the responsibility.

If reciprocity is a factor influencing the selection of vendors—and this practice became rather widely accepted during the decade of the 1930s—the policy should be specifically defined by management, for it is basically outside the scope of scientific purchasing.

2. *Vendor contacts.* The purchasing department is established as the logical point of contact between the company and its suppliers. Sales representatives call first upon the purchasing department. In the event that technical or use considerations indicate the advisability of consultation with engineers, operating men, or other users of a product, a conference is arranged or the sales representative is passed into the plant through the purchasing department.

Most Purchasing Agents are quite willing to make such arrangements whenever there seems to be any good reason. And indeed it is to their advantage to do so whenever the counsel of technical and production men may aid toward effecting a more satisfactory purchase. Some require that a representative of the purchasing department be present, primarily for the purpose of keeping fully informed about the product and its application, since further negotiations, the issuance of the order, and any subsequent correspondence related to it will be handled through purchasing. This procedure is recognized as good selling practice, too, for many potential sales that were apparently closed in a plant interview have been lost somewhere between the requisition and the purchase order, and have gone to a competitor simply because the negotiations were not conducted through proper purchasing channels.

The requirement of making contacts through the purchasing department is not merely a formal insistence on prerogative. One of the primary reasons for having such a department is to save the plant executive from interruptions and time spent in general sales interviews, and the Purchasing Agent would be remiss in his duty if he were to permit, indiscriminately, all callers to have free access to the time of executives whose primary responsibility lies elsewhere.

Ordinarily this responsibility for handling all contacts with the vendor extends through the process of follow-up until the actual delivery has been made and accepted, to the approval of the invoice, and frequently to the point of securing any necessary adjustments on vendors' invoices. The most common exception is in the case of

a centralized purchasing department placing orders for delivery to branch plants, in which case the follow-up is generally done from the branch plant. There are a few departments so strictly functionalized as to buying that their responsibility ends when the order has been placed. Under such a system, follow-up is left to the receiving or using department, acceptance is a matter of inspection or receiving, and invoices are checked altogether in the accounting department. But as a practical matter, if any unusual difficulties arise in connection with expediting or adjustments, the buyers who conducted the original negotiations and issued the orders may be called upon to utilize their established contact with the vendor in order to secure appropriate action.

3. *Checking the requisition as to actual need, and revising quantities.* The requisition for materials, properly certified by a department head, has a double force. It is the evidence of a need and the authorization to make a purchase. The responsibility of the purchasing department is to see that the need is satisfied, but not necessarily to make the purchase exactly as indicated.

There are several reasons why requisitions must be carefully scrutinized and checked in the purchasing department. In the extreme case, the indicated need may not be fully justified by fact or by company policy. Where departmental budgets are strictly observed, especially in governmental and institutional buying, care must be taken to see that appropriations are not exceeded. The requirement may also reveal excessive usage of a given item, which should be brought to the attention of the department head, and may suggest the advisability of a change in quality or type or even in the factory process, rather than the filling of repeated requisitions, thus multiplying the error and loss.

A common problem of procurement is the fact that the description of material on a requisition is frequently incomplete or inaccurate, and this information must be clarified before a satisfactory purchase can be made.

A third reason is that the need may often be satisfied without the necessity of making a new purchase, e.g., by transfer of material from some other department or branch plant, by adapting salvaged or obsolescent material, by substitution, or by self-manufacture.

Quality standards are not ordinarily changed, nor substitutions made, without prior agreement with the using department. Such action, however, is more frequently suggested or initiated by the buyer under present emergency conditions, with shortages and limitations of use in respect to many products. Under such circumstances, the nature of the purchase may be determined more by what is available than by what is requested, and it is a responsibility of the buyer to know what is available that will serve the purpose even fairly adequately, and even though it may involve changes in design or manufacture.

The quantities indicated on the requisition, however, are generally subject to revision, up or down, at the discretion of the Purchasing Agent. Some of the purchase factors which are not necessarily considered in writing a requisition are standard manufacturing or packaging quan-

ties of a product, quantities required in order to come within a more favorable trade discount bracket, etc.; purchase orders will naturally be adjusted to conform to these units and to take advantage of standard commercial practice. Proposed changes in a manufacturer's product design, of which the purchasing department may have knowledge, might increase the dangers of obsolescence, which could be tempered by cutting down the quantity or deferring the purchase if possible; or it might work the other way, suggesting a larger stock order for the design which had been tried and found satisfactory.

Market conditions are a major consideration in purchasing. At a given time they may indicate the advisability of buying larger quantities than called for on the requisition, anticipating future demand against the expectation of increased costs; or making a smaller initial purchase, deferring the bulk of the demand until closer to the time of actual requirement, in the expectation of more favorable costs. It may also be that a contract, spreading deliveries over a period of time, would present the most advantageous method of purchase. The check against the Purchasing Agent's judgment and the danger of buying in too great quantity, is provided in some companies by setting a monetary limit to the commitments a buyer may make in a single purchase upon his own responsibility, without special authorization. This is not unusual, but by no means a universal practice, and the variation in the limitations set by different companies does not provide a basis for any generalization.

4. *Commercial aspects of the purchase.* Prices, terms and conditions of the order, methods of packing and shipment, and similar commercial considerations are clearly the responsibility of the purchasing department. Except in the case of governmental purchasing, where procedures and methods of award are specifically set forth in the statute, it is the prerogative of the Purchasing Agent to decide whether quotations shall be requested or whether some other means of negotiation shall be employed; whether an order shall be placed as a whole or divided between two or more suppliers; whether the order shall be awarded to the low bidder or whether factors of superior quality or service, or of commercial relations, shall outweigh the price factor; whether buying shall be done on a term contract basis or by repetitive orders as the specific need arises.

It is the responsibility of the Purchasing Agent to make the most advantageous possible purchase for his company. A common misconception of the function arises from the tendency to evaluate purchasing performance in terms of invoice prices paid, on the supposition that the lowest price represents the most advantageous purchase. It is obvious that price must always be an important consideration in purchasing, and no Purchasing Agent can evade this issue. But to regard price as the sole advantage of centralized purchasing, or even the most important advantage that can be achieved in buying, indicates a lack of understanding of the elements of cost and of the procurement function.

A more accurate statement is that the Purchasing Agent seeks the greatest value and suitability

This article is the first in a series prepared in response to the urgent demand for training material on the basic elements of the purchasing function. It is particularly designed to aid the many new men who have been brought into procurement work during recent months, and as a refresher course for those who are facing larger responsibilities in buying today.

in his selection of materials and sources. He must also consider the legality of price arrangements—a factor of selection of materials and sources. He must also consider the legality of price arrangements—a factor of constantly increasing significance in view of the legislation of the past several years—and long-term considerations of assured supply sources and vendor relationships, which often outweigh the price advantage of a bargain lot, available only for a single purchase.

Value is compounded of price and quality. Superior quality of a product or material, at higher cost, may represent greater value in terms of longer life, less expense for maintenance, greater productivity, better workability and consequently lower processing and labor costs, and similar factors of ultimate cost to the company not reflected in invoice terms, as well as increased saleability of the manufactured product, higher employee morale, etc. Quality must be considered in relation to the need, to the equipment or process with which it is to be used, and to the desired end product. Thus it frequently happens that decisions made on the basis of the invoice price alone may result in the purchase of materials which are really more expensive because they are not good enough. On the other hand, it is quite possible to buy materials which are too good for the purpose, and in that case the extra quality is sheer waste. To cite a common example, it is equally poor purchasing judgment to procure a cheap and impermanent paper for important records which are subject to severe handling, or which must be kept for long periods of time, or for correspondence with other companies who will form their impression of the character and stability of the organization from its business stationery—as to procure an expensive all-rag content paper for pencilled interdepartmental memos that serve their purpose and are discarded after a single reading. There are other circumstances, such as emergency requirements, breakdowns, and the like, when the price factor is altogether a minor consideration in comparison to the necessity for continued operations.

How Purchasing Lowers Costs

Centralized purchasing operates in other ways to achieve lower costs, which would not be possible without continuous specialized attention to procurement. The combination of requirements of similar items from various departments or plants results in (1) greater volume and more favorable quantity discounts, (2) greater negotiating power because the business is more attractive to the supplier, (3) savings in packing and transportation costs, and (4) economy from handling a single transaction in purchasing, receiving, and accounting, instead of numerous smaller transactions which would involve the same unit costs of office processing.

Standardization of requirements, even by compromising small and non-significant details of quality or size, serves a similar end in increasing ordering and manufacturing quantities. It also reduces the number and variety of items which must be carried in stock, and thus reduces inventory investment and carrying costs.

Another phase of standardization consists of correlating requirements and specifications with existing industry standards. This means that many items can be readily procured from suppliers' standard stock lines, instead of requiring special—and more expensive—manufacture. It likewise makes for better service, shorter procurement time, and purchases that can be limited to actual quantities required at a given time.

A careful and continuous study of markets, possible only when attention is focussed primarily on procure-

ment, permits taking advantage of seasonal or economic price fluctuations, and provides the basis for establishing either a long term or a hand-to-mouth purchasing policy, as well as hedging on markets where exchange facilities exist and such action is indicated.

Transportation and handling charges also enter into material costs. Centralized purchasing involves attention to traffic, receiving of shipments, and the use of acceptance tests, insuring more satisfactory deliveries and less danger of production delays due to unidentified merchandise which may be lying in the receiving or stores department while operating departments are awaiting its arrival.

Adequate records of past purchases give valuable information as to advantageous and reliable sources of supply. Prompt and accurate checking of invoices earns cash discounts, insures observance of the proper terms, and eliminates errors in charges and extensions. All of these factors, plus knowledge of materials and markets, and skillful negotiation, make for economical costs without "beating down the price."

As a matter of fact, the act of buying is only one of many activities regularly performed in the purchasing department, ranging from simple clerical operations to important administrative and policy decisions, all coordinated into a procurement policy and program responsible for smooth and uninterrupted flow of materials into production and the prudent investment of 30% to 70% of the manufacturing dollar for the materials, supplies and equipment necessary for continuous operation. Some of these activities are:

Purchasing Responsibilities

Maintaining price records	Correspondence with vendors
Maintaining purchase records	Issuing purchase orders
Maintaining vendor records	Scheduling purchases and deliveries
Maintaining catalog files	Follow-up
Market studies	Checking receipt of materials
Materials studies	Securing priorities
Developing sources of supply	Extending priorities
Investigating sources of supply	Inventory reports to government
Visiting suppliers' plants	Checking invoices
Checking requisitions	Packages and containers
Securing quotations	Returnable containers
Analyzing quotations	Disposal of scrap, obsolete and surplus material
Interviewing salesmen	Making cost estimates
Negotiating contracts	Legal conditions of contracts

Responsibilities Shared with Other Departments

Office practice	Budget
Determination of whether to manufacture or buy	Inventory control
Standardization	Capital equipment
Simplification	Reciprocal relations
Specifications	Construction
Substitution	Production programs dependent on materials available
Research	

Additional Responsibility of Purchasing in Some Companies

Traffic	Inspection
Operation of garages and automotive equipment	Stores
Insurance	Salvage and reclamation
	Materials accounting

The foregoing lists are not exhaustive, but indicate the type of work which is involved in the general responsibility of procurement and is necessary for doing a well rounded job of purchasing. One of the things which will be apparent from a study of these varied activities is the close relationship of purchasing with other departments of the company—how the buying operation touches the work of accounting, production, sales, engineering, and all the rest, in some essential feature. The same thing would be true, of course, in a consideration of any of these other functions; the success of functionalized management depends on proper coordination, so that each function, expertly performed, is woven into the pattern and program of the organization as a whole. In this study of purchasing, it will be well to examine these relationships in some greater detail, in order to see how purchasing may not only be done efficiently as a particular responsibility within the business structure, but how it may best serve and work with other departments.

Relationship with Production

Purchasing and Production. As previously pointed out, these two functions are historically allied and are frequently coordinated by reporting to a common top executive, as when Purchasing Agent and Plant Manager are both responsible to the Vice President in Charge of Operations. Even when such a formal connection is not maintained, practical considerations demand close cooperation between the department procuring materials and the department using them. In particular it is necessary to be in agreement as to specifications or approved materials, in advance of the need and the purchase, so as to define both the latitude and the limitations upon selection of purchased items, and to assure that purchases made on the basis of this mutual understanding will be acceptable to the operating departments.

In serving production, the purchasing department should advise the appropriate department head when orders are issued, indicating that the requisition has been taken care of, at the same time advising of any changes which have been made in the requisition as to quantity or any other factor, so that plant officials may know what to expect in the way of deliveries. In times like the present, when some materials are scarce, tardy in deliveries, or completely unavailable, purchasing should keep plant executives informed of what similar materials can be obtained, so that any necessary changes in plans or processes may be arranged. Under present conditions, this state of affairs has placed upon the purchasing executive an important responsibility in production planning, based on the availability of supplies, whereas normally his responsibility in this respect would be more in the nature of supporting the proposed production program with a steady flow of the required materials in predetermined quantity. At all times, he should keep production advised concerning new competitive products that would serve the purpose of those currently used, since such products would naturally be brought to his attention through the sales efforts of suppliers. He should procure, upon request or upon his own initiative, test samples of such materials as promise some advantage from either the purchasing or production viewpoint. Whenever it seems advisable to clarify details of application or use, he should make arrangements for a personal interview between the vendor's representative and the plant man. His file of vendors' catalogs should be made available to appropriate operating personnel, and its use encouraged when

new or special requirements are encountered. If a standard stock catalog of inventory items is maintained, or other means of designating items regularly carried in stock, copies should be provided for everyone having occasion to write or approve requisitions. A complete list of surplus and used materials and equipment, and their location, should be kept in the purchasing department, to facilitate the prompt filling of requisitions by transfer instead of by purchase when such action is feasible.

Cooperation on the part of the production department demands that the purchasing department be kept informed of production plans, and be advised as far in advance as possible, of contemplated schedules or special contract jobs to be undertaken, so that the proper arrangements for purchase may be made. This is particularly important in the case of any changes in quantity as compared with previous or normal practice, for the routine guide of the buyer is the record of past consumption as indicated on the purchase or stock record, and this would be a misleading criterion in the event of a change in program. It is also essential in the case of a change in design; otherwise, excessive inventory losses due to obsolescence are the penalty for incomplete information.

The production department is also responsible for providing complete and accurate information regarding requirements, on the requisitions which are sent to purchasing, so as to obviate the delay and extra effort required to clarify or correct the request and to avoid the losses which might result from ordering the wrong materials. The requisition should also be honest and specific as to the time when materials and supplies are actually needed, so as to permit intelligent scheduling of orders and avoid the expense and effort of unnecessary "rush" orders and intensive expediting of shipments. Here again, timing the requisition so as to allow a reasonable period for negotiation and purchase is an important aid to the buyer and promotes efficiency and satisfaction. Scheduling of purchases is a necessary part of any procurement program, if the best performance is to be attained; it is especially so today, under a system of materials allocation by governmental agencies, which is becoming mandatory on an increasing list of products affecting practically all industrial users, whereby the penalty for lack of good scheduling—both in manufacture and in procurement—is likely to be a failure to secure the materials at all.

A third point in cooperation requires the production department to make a fair test and a prompt report on new materials and proposed substitutions, so that the advantages, if any, may be secured as early as possible, the latitude of the purchasing department in making its selection may be extended, and manufacturing and purchasing plans adjusted accordingly.

Engineering Functions

Purchasing and Engineering. The Purchasing Agent and the Engineer traditionally differ in their approach to materials problems in that the Engineer tends to specify wide margins of quality, safety and performance, whereas the Purchasing Agent tends to narrow such margins. The Engineer, by temperament and training, seeks the ideal material or equipment, often with insufficient regard for cost, and the Purchasing Agent seeks the adequate material or equipment, with perhaps insufficient regard for those margins. The two viewpoints have been brought much closer together in recent years with an increasing number and proportion of men with engineering training and background com-

ing into purchasing work, and, in a considerable number of the larger companies, by the appointment of a "Purchase Engineer" attached to the purchasing department for the express purpose of reconciling the two viewpoints with a full appreciation of both and arriving at an "optimum" solution of purchase problems involving technical considerations. The Purchase Engineer is usually in the position of a staff adviser to the Purchasing Agent, directing research affecting relative qualities and costs, developing purchase specifications, and sometimes handling the purchase of such items as electric motors and controls to be incorporated in a manufactured product. Whether such a man is actually a part of the purchasing organization, and despite the fact that it is the Purchasing Agent's responsibility to become technically competent in respect to the materials regularly purchased, it behooves the buyer to take advantage of the knowledge and counsel of the engineering staff on any and all points where such counsel can aid toward more effective selection of materials.

The Engineer has the ultimate responsibility for specifications, which are one of the major tools of purchasing. The closest cooperation is advisable to assure that commercial factors as well as technical factors are given proper consideration, and to make for a specification that is not unduly limited, which would minimize the opportunity for efficient buying. This can usually be accomplished without compromising essential elements of quality. A common example is the matter of tolerances, where excessively fine requirements may result in much higher costs and a higher percentage of rejections without any significant increase in utility. In line with this responsibility for specifications, the Engineer's approval is required for any proposed substitutions, and he has an important role in any program of standardization. The Purchasing Agent is perhaps more likely to initiate such a program and to seek out those points where it might be applied to the benefit of the company in regard to investment in materials, but the decision of the Engineer is invaluable in determining where, how, and to what extent the principle can be applied without jeopardizing the quality of the manufactured product.

Capital Equipment Purchases

In the selection of capital equipment, the engineer and the production executive have a dominant voice. The Purchasing Agent can be of distinct service in developing cost data and in finding out what is available, and should be constantly in touch with contemplated installations of this nature, since he will have the responsibility for negotiating and contracting for the equipment, but the actual selection of major production equipment, especially where various makes of machine tools, for example, have individual characteristics of design and operation, is outside his province. It has previously been pointed out that the purchasing department has certain prerogatives respecting the selection of supply sources on competitive products of a repetitive nature. Conversely, the buyer must respect the prerogatives of other departments and not try to take in too much territory. The line is fairly clearly drawn between standard and specification materials on the one hand, and capital expenditures on the other.

In regard to the engineering function of design, the purchasing department should provide lists of standard stock items and parts, so that design can be adapted to these standards so far as practicable, rather than extending the inventory unnecessarily and adding to the list of purchased items. The buyer can also contribute

much in the way of research on materials under consideration. He has a wealth of information in his files and records, and is in constant touch with active and potential suppliers; the Engineer will do well to make use of this information and these contacts during the process of development, and the alert Purchasing Agent will on his own initiative pass along any pertinent and constructive ideas that may come to his attention regarding new products, improved analyses and processes, tools, finishes, and the like.

Inventory Responsibilities

Purchasing and Stores. It is a common industrial practice to combine the responsibility for purchasing and the responsibility for storeskeeping and disbursement of materials. They are essentially two successive steps in the same process of having materials and supplies available as needed for the production or operating program. Their subject matter is identical. On items which are regularly in use, and which are carried in stock against anticipated demand, the purchase requisition originates from the stores department rather than from the operating department, when supplies on hand have been reduced to a predetermined ordering point. In railroad and utility operations, where storeskeeping is in itself a major function, involving the maintenance of essential stocks at scattered points under central control by a responsible stores officer, the connection with the purchasing department is very close, and is almost universally coordinated under the direction of a major company official charged with the dual responsibility. In the small or medium sized industrial organization, operating one or two plants, where the division of staff duties is not so elaborately carried out, the combination of purchasing and stores functions is a most logical arrangement.

Considering them as two distinct responsibilities, whether or not they are under the direction of a single executive, the following points of common interest should be observed and coordinated:

(1) Accurate perpetual inventory records, with prompt reporting of receipts and disbursements. The purchasing department record will include, in addition, an entry of orders and contracts placed, of goods held by the manufacturer for the buyer's account, and of quantities earmarked for a particular use in manufacturing, so as to provide a more comprehensive picture of supplies which are actually and potentially available.

(2) Determination of maximum and minimum stock quantities, subject to review and adjustment as operating requirements change, or as the procurement cycle changes and either longer or shorter periods are required for replenishing stocks. The increasing tempo of manufacturing schedules and the difficulty of securing prompt delivery on many items at the present time have rendered obsolete the maximum/minimum quantities of a year or two ago, and similar variations, on a selective rather than a generalized basis, are a constant problem of purchasing policy. Many companies have found it an advantage, if not a practical necessity, to consider inventories and purchase schedules in terms of so many days' or weeks' supply, rather than in terms of unit quantity or dollar value, and this supply measurement will vary with every change in the rate of use. This principle is recognized in the current inventory regulations prescribed by government.

(3) The development of a prompt and automatic system for advising the purchasing department when the minimum stock quantity or ordering point has been reached. Unit piling of materials is one effective method,

with a marker inserted at the proper point, providing a visual and physical signal to the storekeeper, rather than depending on the card record, which involves some delay for making the entry and is further subject to the possibility of clerical errors or oversights. Another method is to segregate the minimum quantity in a separate bin or in a sealed package, with an appropriate tag attached. As soon as this quantity is broken into, the tag is sent to the purchasing department and serves as the notice or requisition to buy.

(4) Particular attention to slow moving items, indicating the possibility of filling requisitions by transfer or substitution, thus avoiding losses from depreciation and obsolescence, and increasing turnover. The storekeeper is in a favorable position to note the presence of such items in his stock, and turnover is one of the measures of efficiency in both purchasing and stores.

Accounting for Expenditures

Purchasing and Finance or Accounting. Every purchase made represents an expenditure or commitment against the company funds. It sets in motion a series of accounting operations, such as charging the expense to the proper contract or departmental account, the verification and approval of the invoice for purchased items, the payment of the invoice, and the final audit. In the case of large and unforeseen expenditures, it may involve special financial arrangements or affect the company's credit. In the case of many current government contracts there is the further consideration of obtaining prompt reimbursement for the expenditure. The relationship between purchasing and the financial and accounting departments is therefore a vital one.

Cooperation in this respect starts before the purchase is actually made. If operations are strictly budgeted on a project basis, or on a departmental basis as in the case of governmental or institutional buying, it is a necessary first step to see that a sufficient balance is available in the particular appropriation to cover the proposed purchase. This is generally accomplished by requiring a certification by the appropriate accounting officer on the requisition or on the office copy of the purchase order before the order is released to the vendor. On government contracts a similar purpose is served by securing the endorsement of the contracting officer and by otherwise seeing to it that all the contract requirements and technicalities have been scrupulously observed.

In the case of extraordinary commitments not covered by a special appropriation, such as purchasing materials in quantity in advance of actual requirements, in the anticipation of a price increase or for any other reason suggesting a more liberal inventory policy, the Purchasing Agent will do well to consult first with the financial officers of the company, apprising them of the proposed expenditure and why it seems advisable from the purchasing standpoint. This serves a double purpose. It is a check on the Purchasing Agent's judgment, bringing into consideration financial factors which may modify or even outweigh the expected advantages. Secondly, if his judgment is upheld, it will permit the making of any necessary financial arrangements for meeting the obligation as it comes due. In some companies this is automatically provided for by setting (a) a financial limit to the size of purchases which the Purchasing Agent can make without special authorization, and (b) a second, higher limit within which purchases may be made with the concurrence of the Treasurer or General Manager. Beyond this limit, large commitments require the approval of the Executive Committee or a

special appropriation. The purpose of these limits is not primarily restrictive, but administrative. There is no standard gauge of policy that would permit any generalization as to specific limits. Customarily, where this plan is used at all, it is liberal enough to provide for the exercise of good purchasing judgment without the formality and delay of seeking such special authorizations under the conditions of normal operation. It is designed to deal with the extraordinary or abnormal situations.

It is advisable for the Purchasing Agent to advise the accounting department regularly concerning all expenditures for which commitments have been made. The simplest method of accomplishing this is to make an extra carbon copy of the purchase order, routed to accounting. Besides giving notice of an obligation which will have to be met, this provides a basic record which can be reconciled with the receiving report and the vendor's invoice when the delivery is made, establishing the propriety of the charge and giving a complete check on the entire transaction. In many companies this is supplemented by a daily report or recapitulation of the orders issued. Such a report rarely goes into much detail beyond the order numbers and the amount of money involved in each, and the total for the day. It is a useful guide to financial planning, and—over a period of time—an approximate indicator of business volume.

Checking of invoices is done sometimes in the purchasing department and sometimes in the accounting department; in some cases this responsibility is divided, with the purchasing department looking to prices, terms, and special charges such as packing and transportation, while the accounting department checks the extensions. A common device insuring that no essential feature has been overlooked is the use of a rubber stamp, providing spaces for checking and initialing under such headings as: "Price OK; Terms OK; Discount; Transportation Charges; Extensions OK; OK for Payment." It is also common practice to require duplicate copies of the invoice, one of which goes directly to the accounting department while the other goes to purchasing. This speeds up procedure in that the two departments can process the invoice simultaneously, and it also provides the documents for closing the files on the transaction in both departments with a complete record.

Whatever checking routine is followed, it is a responsibility of the purchasing department to clear all invoices promptly—usually on the same day they are received. Where cash discounts are involved, for payment within a specified period, there is a direct relation to cost in seeing that they are earned. The monetary total of cash discounts amounts to a substantial sum in any purchasing program sufficiently large to warrant a centralized purchasing organization, and in terms of annual percentages corresponding to interest for the use of money, the potential savings are very great indeed. These advantages are as frequently forfeited through carelessness as through lack of resources, and any well-operated purchasing department will make provisions to see that this does not occur. In many cases, the amount of cash discounts alone will be equal to the total cost of administering the department.

A first step is to sort the invoices upon arrival, separating those which provide for a cash discount from those which do not, and giving prior attention to the former group. A second step is to "flag" the discountable invoices when sending them to the accounting department, by attaching a slip of paper of distinctive color, again assuring preferred attention. A third step,

when discount-bearing invoices come into dispute for any reason, requiring adjustment before they can properly be paid, is to notify the vendor at once, going on record that the discount privilege is not waived by reason of this action.

The matter of adjustments generally is a responsibility of the purchasing department, even though the point at issue may be a simple detail of accounting. This policy recognizes the basic principle that all vendor contacts are handled through the purchasing department and that the purchase (or sale) is not complete until the delivery is made and the invoice paid. It takes advantage of the buyer's personal contact and his influence in the role of a customer whose good will is valued and desired. A simple and efficient way of handling routine accounting adjustments is to prepare a printed form listing a half dozen of the more common reasons, such as "Invoices required in duplicate," "Order number not shown on the invoice," etc., which can be checked by a pencil mark and attached to the invoice being returned for correction. Adjustments arising from such causes as incorrect or defective material, merchandise damaged in transit, and the like, would of course require a different sort of treatment.

Purchasing and Sales. The purchasing and sales departments have a number of common interests, and were brought closer together during the business depression and buyers' market of the 1930s when all executives, regardless of their particular function, became more organization-minded and cooperative in seeking to develop outlets for the company's product. That emphasis served to clarify the common goal and tended to correct a trend toward over-functionalization in each individual assignment of responsibility, at the expense of sensible—and profitable—coordination.

One of the functions of the purchasing department is to prepare cost estimates (cost of materials) for use in sales quotations. In the manufacture of consumer goods that are designed to fit a given price range, the purchasing department is limited as to permissible expenditures, but can determine how much quality or quantity can be built into the product within these limits. A recent survey of buying motives listed, along with the classic trio of quality, price and service, the ability of a product to increase the salesability of the company's own manufactured product. This is a constructive extension of the old maxim that "Well bought is half sold" and of the generalization that a buyer's first interest in price is to keep his company in a competitive position with the rest of the industry.

As in the case of production and design departments, the Purchasing Agent will bring to the attention of the Sales Manager whatever is available in the way of new materials, new finishes, and the like, which might be applied with benefit to increase the saleability of the product as well as to reduce its cost. This is not to arrogate or usurp any of the prerogatives of the sales and design functions. Management has learned over years that valuable suggestions may come from many unexpected places in the organization, a fact which has been freshly emphasized by the experience of war production. In regard to materials, no department in the organization is more favorably situated to develop such suggestions than is purchasing, which regularly deals with materials and their sources.

Reciprocal relations constitute a subject on which

purchasing and sales departments must be in agreement. Traditionally, purchasing men have been opposed to reciprocity as an infringement of their prerogative of free selection of suppliers. Certainly it is a practice which is easily subject to abuse, and the pressure upon the Purchasing Agent has generally been stronger from his own sales department than from his potential suppliers. One of the important developments of the past decade has been the rationalization of reciprocal buying. While it can probably never be accepted as a completely satisfactory buying argument, except on the basis of "all other things being equal" (which is rarely the case), it is quite generally recognized as a management policy involving both purchasing and sales—a business factor to be considered in making purchasing decisions along with other economic and market factors. Many purchasing departments have now organized their records and procedure with a view to using this factor most intelligently, just as their records and policies have been adjusted to take account of commodity fluctuations, seasonal markets, the business cycle, etc.

Less directly and explicitly keyed to sales department activities, but perhaps constituting equally effective cooperation in the long run, is the fact that a reputation for fair and courteous dealing with vendors' salesmen, redounds not only to the benefit of the purchasing department, but opens the door for the company's own salesmen in their calls upon the vendor companies. Indeed, such a reputation is an asset that goes far beyond cooperation with any one department, for it is one of the intangibles by which the character and prestige of the entire company is judged by its contemporaries.

During the wartime emergency, when expediting became a major purchasing problem and sales departments languished for lack of anything to sell, some companies have found an interesting and effective solution by constituting the field sales organization as an expediting staff. This is not cited as a policy of general application in the purchasing-sales relationship, but as an illustration of how the facilities and personnel of one department may be utilized for the general benefit of the company operations as occasion may demand.

The list of interdepartmental relationships could be continued at length, but the principal contacts of purchasing have been covered above. The particular operating conditions and organization in any given case will suggest variations and extension of the general policies here outlined. To promote such coordination, a weekly conference of department heads, with free discussion of the problems of the moment, is a simple and effective means of developing a workable program, putting general policies into practical terms, promoting mutual understanding and cooperation, and clearing up troublesome cases of overlapping or conflicting authority.

In the smaller company, with a less extensive and less formal type of organization, personal contacts among the executives are closer and more frequent in the natural course of business. It is more likely under such circumstances that each department head will be aware of what is going on in the other departments, and why; if he doesn't know, he can step into the next office and find out. Even so, a periodic "round table" at which the common problems and objectives are reviewed and discussed, offers many advantages to commend the practice.

Next Month: Essential Purchasing Department Records



WHERE DO WE GO FROM HERE?

By CHARLES FORD

BACK in the early days, when a horse wasn't a novelty, and sparrows could glean a more or less honest living in the streets; when automobiles were horseless carriages and cost from five to fifteen thousand bucks per each, cash down on the barrel-head; when the passing of one of these evidences of wealth caused as much stir as a bombing raid,—some enterprising plutocrats in a New England city decided they would hold an automobile "meet" and show the country folks a few things.

The meet was a great success. About everything mobile and mechanical in the world that could make a noise and a smell, except a road roller, was represented.

After the meet they blew themselves to a dinner. Among the guests, sitting between the treasurer and a friend of mine who was one of the directors, was a quiet, unobtrusive gentleman who was introduced as "Mr. Ford." He apparently had very little to say; but did let drop the casual remark that he planned, during the coming year, to build a thousand cars and sell them for five hundred bucks per copy. No fireworks, no boasting, just a casual remark. But somehow or other it spread about like a prairie fire; and the owners of the lordly vehicles that cost, each of them, probably as much as Mr. Ford made in a year, looked down their noses and mentioned safe retreats for the mentally deficient.

Well, in this year of our Lord 1943, the sparrows have a hard time getting a living; and the lowly Model T, which could be repaired with a monkey-wrench and a screw-driver with parts from any corner drug-store, in great measure made possible the endless procession

on rubber tires of today; and its amazing production showed the way to our present letting loose of a flock of war-birds for the discomfiture of Herr Schickelgruber and his slimy satellites.

Two or three decades ago, when you wanted to make an impression on your best girl, you bought the highest-priced box of chocolates you could find, and it may have been wrapped in a transparent substance you hadn't seen before. It came from France, and was called cellophane; and in those days it took two dollars and a half to buy a pound of it. Some forward-thinking guys on this side of the water got ideas, and started making cellophane. As they found new uses for it, they worked their costs down, and had the good sense to work down their selling prices at the same time. Now it's somewhere around forty cents a pound and you can't forsake your automobile and walk a block without getting your feet tangled up in discarded cellophane wrappings. Of course these birds didn't figure that by constantly reducing their price, they might incidentally discourage others from going into the cellophane business.

A Buying Spree Ahead?

In a recent magazine article, Mr. Arnold, of trust-busting fame, emphasizes an opinion that when this cruel war is over and we get down to earth and can sell something to somebody besides Uncle Sam, we are going to find there is an unprecedentedly immense purchasing power, now dammed up by the wall of governmental restrictions. Years of unsupplied wants, and enforced unspendable savings; and when the dam gives

way the flood will sweep out and we shall see a buying orgy like nothing in history. To hell with figuring interest on savings deposits and carrying war bonds around in your pocket until the ink wears off. By heck! we're going to blow ourselves.

Business will be one gigantic jag of joy.

I wonder.

Wants? Every human being is going to be a perambulating aggregation of wants. New clothes, cuffs on their pants and rubber in their girdles. New cars with chromium all over them and real rubber tires. New radios, refrigerators, washing machines, golf clubs. Devil take this lugging back an empty tube when you want some tooth paste. Three spoons of sugar in a cup of coffee and gasoline galore!

Hooray!

But, like the cottage with a Queen Anne front and Mary Ann behind, maybe there's another side to the picture.

A Problem in Finance

Millions of men will be let loose from the wars. Millions of women now holding jobs will again have to think in terms of minding the baby and providing corned beef and cabbage for the old man's dinner. Despite the good intentions of the politicians, hordes of people in government employ will find, some fine morning, that the government jobs have been snuffed out. And the schools and colleges will continue to turn out their annual grist of job-seeking youth.

Factories, running twenty-four hours a day and seven days a week on stuff to blow hell out of the boche, will have to go back to tractors and typewriters and hairpins and lawn-mowers and motor cars. But you can't jump a big factory from bombers back to tractors without spending a lot of dough for retooling and leaving a bunch of men idle while you're doing it.

While this world-wide reconstruction is going on, how much are we going to eat into our savings, if any? How many of our hardly-acquired bonds are going to be hocked for sustenance before the industrial and agricultural machines get to functioning? How much real dough will be available for a buying orgy? Do you suppose each child will have an army jeep to play with?

Again, I wonder.

The American Way

To the casual newspaper reader, the American way of life, and the American way of *living*, mean the same thing. Which the same is very much hokey. The American way of life is the heritage from a lot of grand old pieces of work in the shape of hard hitting ancestors, who impressed upon the skewy-eyed universe that it was a pretty damned good thing to be able to worship at any church you please, or none at all if you feel like it and the day is a good one for golf; to say what you like so it's decent, furnish every child with at least a workable education; have thrust behind your screen door every morning a newspaper that is privileged to comment impartially—if it can—upon what is happening and what your government is doing; and to hold a proper job or run a modest business without interference. In other words, with reasonably circumspect behavior, every man is his own boss and can do as he damn' well pleases.

The American way of living may be, and frequently is, quite another matter. Extravagances in conduct and expenditure; jazz, juke-boxes in every restaurant; bad manners and worse taste; lack of a properly critical outlook upon our governing bodies; a disposition on the part of our elected representatives to favor certain

interests and to hell with the rest. Keep your weather eye peeled or the Joneses will catch up and pass while you sleep. In the scramble for superficialities, we mistake indifference for tolerance. We put up with conditions that, if we saw them in other countries, would make our noses rear up like anti-aircraft guns.

The idea of the American way of life is still with us; but it needs some dusting off.

After we have tidily tucked away the Schickelgrubers and the Yellow Apes and Back-stabbing Benitos in their destined doghouses—preferably subterranean—we have a clean-up job to do; and while we're doing it we might take a little thought about what's going to happen to us.

Undeniably we shall have accumulated a tremendous backlog of wants and needs. The old car will have done its hundred thousand miles and will wheeze like an

Continued on page 210

The Legal Adventures of Buyem Wright

THE ADVENTURE OF THE HASTY PAYMENT

The salesman checked over Buyem Wright's order.

"Anything else? he queried.

"No. I've ordered far too much now," Wright demurred.

"How'll we ship?" the salesman queried.

"Oh, just the regular way, and you can draw a 30 day draft, with usual discount if we pay it when presented," Wright directed.

Ten days later the draft arrived at the local bank before the goods reached the express office.

"Might as well pay that now and take the discount—we've got the ready and available cash," Wright assured himself, took up the draft, and had it stamped "paid". The goods arrived the next day, and the precipitate buyer found that the quality was not as represented.

"That stuff isn't worth carting to the store," Wright told the express agent, laid the facts before his attorney and instructed him to sue the wholesaler.

"You might have had a cause of action once, which we do not admit, but you're too late now. When you paid the draft you waived any right you had of suing us for damages," the wholesaler contended.

"That might be true if the order had arrived ahead of the draft," Wright's attorney retorted.

And the Ohio courts in the case of Creighton vs Comstock, 27 O. St., 648, decided that the buyer, by paying the draft before he had an opportunity to examine the shipment, had not lost the right to sue for damages for a breach of the original contract of sale.

Sixth article in
a vital series



RED TAPE MUST GO!



IT CAN BE DONE

There's a big offensive under way along the Red Tape front, and the general headquarters are located in Washington, D. C.

By
STUART F. HEINRITZ

IN CONCLUDING such a series of articles as this, it is highly desirable to have a happy ending, or at least—as so many of the half-hearted Christmas versifiers expressed it during the recent holiday season—as happy as possible under the present unfortunate circumstances. It is therefore appropriate to take notice of what has been done toward the elimination of Red Tape in Washington over the past six months. Much of this has already been reported in these pages as it transpired, step by step, but such fragmentary communiques do not give a truly adequate or comprehensive picture of the broad offensive which has been launched in the Battle of the Potomac, and the progress made on the Red Tape front.

At the very outset of our own campaign, we promised ourselves, and those with whom we discussed the matter at Red Tape headquarters, that the series should end

on the hopeful note of "It *Can* Be Done!" There was some uncertainty at the time, as to how soon such a declaration might be justified. But as a matter of fact, if we had not been convinced of the truth of this slogan, that a substantial part of the Red Tape evil could be eliminated, there would have been little point in undertaking the campaign in the first instance. We harbor no delusions of being an irresistible force, or even a reasonable facsimile thereof; nor do we entertain any ambition to try conclusions with an immovable object. It seemed to us, however, that the problem of Red Tape is pretty much a matter of common sense, and we had faith in the fundamental common sense of the men charged with the enormous job of war procurement and in their determination to carry it through. That faith has not been misplaced.

In all fairness it should be noted that when we, as a

nation, embarked upon this tremendous wartime program, results were more important than procedure—even though the results might be costly, the procedures burdensome and wasteful. Everything couldn't be done at once, and first things had to come first, in spite of mistakes and frequently sloppy management. President Roosevelt, in his disarming way, expressed this viewpoint in his address on the state of the nation, at the opening session of the present Congress. He freely admitted the prevalence of Red Tape in government procedures, but contended that the tremendous accomplishments far outweighed this consideration. In avoiding the potentially fatal error of doing too little too late, we naturally incur the procedural hazards of trying to do too much too soon.

No sensible and patriotic citizen, intent upon winning the war, would take issue for a moment with that philosophy of relative values. But it is essentially an emergency line of thought, scarcely sound as continuing policy. For results and methods are not permanently opposed, raising the problem of choice; procedure is, or should be, a means for achieving results, and the two must be reconciled at the earliest possible moment if the program is to proceed with any semblance of continuity and efficiency. There comes a point at which the wrong way of doing things actually gets in the way of getting them done at all—when the Red Tape clogs machinery, ties up manpower, and stops the clock, so that we get more and more records and less and less production for the effort and expense going into the program. It weaves a powerful barrier between us and our objectives. At this point, any proper concern for results demands a thorough review of procedures, to the end that they may serve to expedite the program, as intended, rather than to impede or even defeat it.

Business men in general, and Purchasing Agents in particular, were keenly aware that this danger point had been reached when American industry swung into action on the accelerated production schedule of 1942. Brilliant as has been the record of accomplishment by that team of three—management, labor, and government—in attaining the unprecedented production goals of the Victory program, it was painfully apparent and factually demonstrable that we had fallen far short of

the efficiency potential; that months, manpower, and materials, which should have been intensively utilized to their utmost productive capacity, had in fact been prodigally wasted; and that one of the principal contributing causes was the old bogey of Red Tape procedure. Results were being obtained in spite of method, not because of it.

Government agencies were likewise aware of this situation. They could scarcely have been unaware of the rising tide of complaints from industry concerning the complications and delays and extra costs of handling war business the government way. If they had been insensible of this criticism, their own experience in the struggle to get delivery of urgently needed products would have pointed to the same conclusion. Some of them were sensible enough to see that nothing was to be gained by mutual recrimination, by face-saving efforts to place the blame or to justify faulty methods and excessively burdensome clerical and procedural requirements. A few of them have had the common sense and initiative to do something about it.

Services of Supply


By all odds, the most purposeful, intelligent and thoroughgoing job of Red Tape elimination in this war economy has been done by the Army Services of Supply. It started early in 1942 with a reorganization, centralization of authority, and the appointment of a competent, dynamic executive who combines the understanding and capacity for military command and the ability to look beyond methods to results.

There is no more implacable foe of Red Tape than Lieutenant General Brehon H. Somervell who took command of the Services of Supply a little less than a year ago, with broad responsibility over the whole range of material requirements for all the various branches of the service. He is first of all a soldier, a fighting man with the will to win and a deep sense of responsibility for the fighting men on the far-flung war fronts. He is determined that the American soldier, wherever he may be, shall be the best equipped and best cared-for soldier in the world. He is intolerant of delay and excuses because he translates them into terms of hardship, military disadvantage, and bloodshed, and his associates in S.O.S. are not permitted for a moment to lose sight of this basic interpretation of their function.

He is a man of direct action. When you learn of simple memoranda, impeccably couched in the strict and formal terms decreed by some War Department Emily Post as the proper etiquette for military correspondence, which require forty-eight hours to be transmitted from one end of the corridor to the other, mark down the Services of Supply as an exception to the rule. There are no papers loitering on the desks in this department. Unless it is absolutely essential, there are no papers. The rule is: "Action."

In battling the Nazis and the Nipponese, he is ready to do battle with a dilatory supplier, or with the War Production Board, if need be. More important, from the viewpoint of this study, he has the courage to do battle with tradition.

When General Somervell took over the Services of Supply, the Army purchase regulations had a scale weight of fifteen pounds, and the procurement process itself was correspondingly ponderous. To more than six hundred procurement offices of the Chemical War-



***It takes courage
and intelligence
to fight against
tradition***

fare Service, Engineer Corps, Medical Department, Ordnance Department, Quartermaster Corps, and Signal Corps, at Washington, Corps Area headquarters, depots, arsenals, and Army stations—representing a personnel of many times that number—this tome was the Alpha and Omega of purchasing practice. On July 1st, only about ninety days after the new regime had been set up, a memorandum was issued to “all personnel concerned with purchases of supply and construction, or sales of supplies and salvage property.” It accompanied a new and streamlined set of procurement regulations that—complete with index and three-ring binder—tipped the scales at just under a pound and categorically superseded “the 5-series of Army Regulations, War Department Procurement Circulars, and all prior instructions and directives which are inconsistent therewith.” The old order was officially dismissed in a single 19-line paragraph of introduction—“for reasons too obvious to mention.”

The new manual is a model of clear and comprehensive statement of essentials, arranged for quick reference and for ready revision or amendment as required, with a system of decimally numbered paragraphs and a tab index covering: General Instructions, Negotiated Purchases, Contracts, Bonds and Insurance, Foreign Purchases, Interbranch and Interdepartmental Purchases, Disposition of Surplus and Unserviceable Property, Federal, State and Local Taxes, Labor, Plant Facilities, Extensions, and Miscellaneous Purchase Instructions. The condensation has not been effected by any omission of essential information or by copious reference to other sources.

Here, in a hundred printed pages in a single binder, was the declaration of war against Red Tape.

Sensible Auditing

Before the end of the following month, a communique from the S.O.S. Fiscal Division reported another slashing attack on the Red Tape front, in the form of “a basic change in the traditional Army auditing procedure in the interest of simplification. It is a selective auditing procedure which has the endorsement of a special committee of the American Institute of Accountants.

“Audits of cost-plus-a-fixed-fee contracts are necessary for the purpose of ascertaining that contractors’ invoices, certified as correct by them, are in accordance with contract provisions and are substantiated by accounting records. While all documents and schedules in support of reimbursement vouchers must be reviewed, the new practice permits the selection of representative sections of transactions to be audited, when the contractor’s internal control and other safeguards justify it. Instead of making a detailed check of every item involved in a manufacturing cost, the selective procedure means that a faster, more efficient and discriminating audit can be made to the advantage of all concerned . . . Much duplication of work is eliminated, and the cost of auditing is lowered. It will expedite the reimbursement of contractors, and provide a more effective audit of contractors’ claims.”

So far as the Army’s own responsibility for accounting and verification is concerned, this was a major advance—even more significant as a statement of policy than in the auditing procedure itself. S.O.S. had definitely started on a house-cleaning operation.


House-cleaning is likely to be a tedious and messy

job at best. You start to throw out the dusty accumulations of years, and find that this or that has been saved for a season—not always a good and sufficient reason, but often affecting the sentimental and proprietary rights of some one else in the family. You also run the constant risk that tomorrow you may be looking for just the item that went on the trash pile yesterday, so that you must be pretty sure of your mind before indulging in wholesale ejection of what seems to be superfluous. You have to be careful to retain all the essential elements of good housekeeping while discarding the excess. So ruthlessness must be tempered with judgment and consideration.

From the Inside Out

In October, 1942, the Services of Supply organized a Red Tape Committee to do this job, and asked for a report in ninety days’ time. Able and high ranking officers were assigned to the duty, and a well qualified civilian chairman was appointed—Comptroller Earl G. Ward of Montgomery Ward & Company, Chicago, who had already demonstrated his ability and capacity in other special services for the government. His civilian status in this project, and his 100% volunteer status without even the benefit of a dollar a year, was a decided asset. For while relative rank is indubitably necessary in any form of military organization, it is likewise—from its very nature—a breeder of formality, Red Tape, and qualified action. An objective and independent approach was essential.

The spirit in which this survey and analysis was undertaken deserves the highest commendation. It was an honest and forthright effort to get at facts and to correct any faulty conditions which might be disclosed. The immediate factor prompting the inquiry was criticism from the outside—specifically, the case study of Ordnance contracts which inaugurated this series. But the reaction to this criticism was not resentment or defense; it was close and complete cooperation, recognizing the common objective in the slogan, “Red Tape Must Go!” So far as our own connection with the entire campaign is concerned, involving contacts with a score of officers, and voluminous correspondence, the sour notes have been practically negligible.



***Red Tape denotes
indefinite objectives
and careless
organization***

And while the study has revealed, among other things, many instances which show that Red Tape is by no means a government monopoly, the committee has scrupulously hewed to the line in dealing with the Army procedures. House-cleaning is a process that has to be done from the inside out.

The Red Tape Committee tackled the problem at three levels—Washington, district procurement offices, and local depots. They found out what was going on and why. They were less concerned with forms and signatures than with the work to be done, reasoning soundly that if objectives could be clarified and standard minimum requirements established for accomplishing the desired results, the paper work would almost automatically take care of itself, the duplication of operations would be eliminated, and superfluous records would go by the board. The surest way of coordinating procedure, avoiding inconsistencies of method, unnecessary signatures and audits, was to prepare flow charts that would organize and route the really essential records to key control points. If that internal situation was corrected, it follows logically that the elaborate requirements imposed on industry would be correspondingly simplified.

The committee had power only to make recommendations. Their report was made on schedule, early in January. It is, quite properly, a confidential War Department document. The executive officers of S.O.S. will make the decisions which will translate its recommendations, wholly or in part, into official regulations and procedure, and it may take another thirty days before this action becomes effective. But it requires no seventh son of a prophet to divine the direction which this action will take. For the investigation itself has exerted a notable influence for improvement, and the pattern is rather obvious—almost, like the initial revision of general regulations, "too obvious to mention."

It was the experience of some of the investigators that they had a hard time in catching up with the problem, so rapid was the progress. Sometimes, they suspected, the sudden reform was prompted by the news that they were on the way and a consequent desire to beat the investigation by local house-cleaning jobs that had simply been deferred by inertia or by

more pressing responsibilities. Sometimes it was effected merely by suggestion, for a good deal of the Red Tape is not actually rooted in the regulations, and procurement officers all along the line are reported as being honestly eager to improve their performance. Whatever the motive, the results were equally gratifying. We share the gratification of the committee in the knowledge that several of the examples reported earlier in this series are already obsolete.

Three Basic Changes

It is probable that the fundamental changes will be made along three general lines:

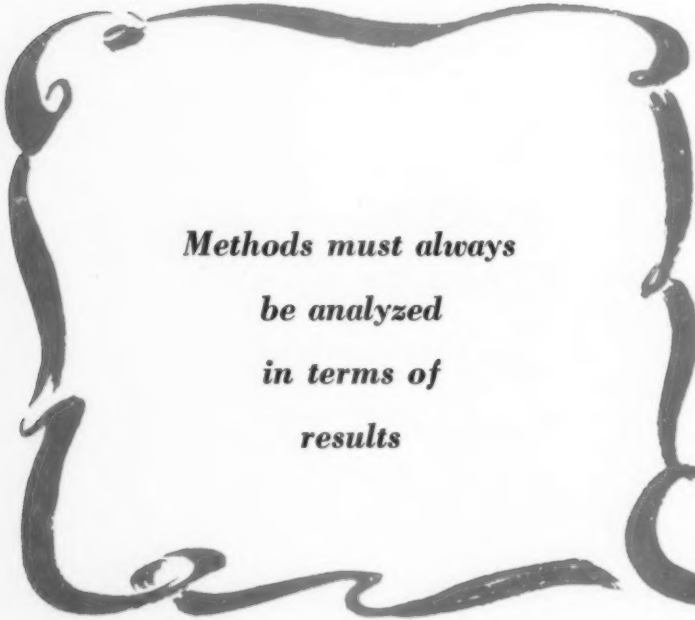
1. Standardization of procedure and record requirements throughout the Army procurement organization, so that the supplier dealing with several different branches of the service, or with procurement offices in different corps areas, will not have to set up a special procedure for each separate contract. This industrial advantage is, of course, incidental to the simplification of internal controls.

2. Greater decentralization or delegation of authority to procurement officers in the field, away from the headquarters office and closer to the individual contractors, made possible by a clarification of basic regulations and minimum contract requirements, and positively controlled by standard procedures. This will eliminate much of the delay incident to getting approvals and authorizations from distant points.

3. A simplification of the fiscal record and audit requirements that will still satisfy the General Accounting Office, but will expedite payments and eliminate the duplication and delay involved in the present system of after-the-fact—long-after-the-fact—auditing and reconciliation of accounts.

In this third step, it is apparent that the remedy lies at least partially outside the War Department itself, and as pointed out in a previous article, the express and implied documentary requirements of the General Accounting Office constitute one of the most prolific sources of Red Tape in procurement procedure. The burden for effecting and continuing the improvements that are potentially possible in this area will rest heavily upon the Fiscal Section of S.O.S. rather than in the procurement service. The two are inextricably related.

But we have reports from the field that G.A.O. has already moved to remedy the situation by applying in its own organization and work the principles set forth in step (2) above. The first and natural reaction of any department which is months behind in its auditing is that it is obviously understaffed, and that the assignment of a field staff is consequently impracticable, whatever the theoretical advantages may be. But it has been tried, and the results, so far as may be judged from fragmentary information, have been more than satisfactory. A field auditor, armed with discretion and authority, can visualize what figures mean in terms of actual needs and actual materials, and can arrive—more accurately and equitably—at a decision that might otherwise entail weeks or months of correspondence and conference, involving the auditor, the procurement officer, and the contractor, long after the figures had grown cold, the material processed, and the evidence vanished. Comparing this procedure with the necessity for digging a defunct transaction out of the files and



**Methods must always
be analyzed
in terms of
results**

reviewing it solely from the standpoint of the somewhat stale records, it is quite probable that G.A.O. will find that such a staff, properly stationed and empowered, would automatically solve the personnel problem by eliminating from one-third to two-thirds of the effort now required to do the same job tardily from their ivory tower in Washington. It is scarcely necessary to add that any contractor will be delighted to have a clearance of his accounts on a 48-hour basis, with many potential suspensions either eliminated at once, or confined to the item in question rather than holding up the entire sum awaiting judgment. This is probably the hardest single problem in the entire program, but there is evidence tending to show that a simpler and more effective working agreement can be reached without sacrificing any essential element of control or any basic record, and that this result may be on the way.

Follow the Leader

The War Department program has been discussed in detail because it is the most comprehensive and searching study and the most determined attack on Red Tape that has come to our attention, and provides a model for similar action wherever Red Tape is destroying efficiency and impeding progress. What the War Department has done, other governmental agencies—and private enterprise as well—can do.

Unfortunately, few other agencies have adopted the same policy of correcting internal procedure first. And while considerable relief to industry has been effected by haphazard forays against particular instances of Red Tape, the results are meager in comparison to what can be accomplished.

In the War Production Board, for example, the work of the Committee for Review of Data Requests from Industry, dealing specifically with the growing evil of questionnaires and reports, under the chairmanship of Joseph I. Lubin, has accomplished a big job. Approximately 120 industry reporting forms, about 20% of the total, were eliminated altogether as serving no useful purpose, having outlived their usefulness, duplicating information otherwise available, being unnecessarily burdensome to industry, or for other reasons. These eliminations affected 25,000 reporting companies, and are estimated very conservatively to represent a saving of thirty million man hours per year in filling out forms. In addition, 132 forms were substantially revised to correct conflicting instructions and ambiguous data, simplify data and standardize size and arrangement to facilitate their use. These benefits accrued to 125,000 reporting firms.

The benefits are given permanency by the requirement that any proposed new report or statistical questionnaire must be approved by the committee. If that approval is not granted, industry may ignore the request. A similar regulation, by the way, has been passed in respect to requests from any federal department or agency, and since the first of the year the approval of the Director of the Bureau of the Budget is required.

But substantial as that accomplishment has been, the project was set up essentially as a grievance committee. The suggestions came, by invitation, from the outside and they affected only those external report forms. James Clay Woodson, who succeeded Mr. Lubin in

December, is described in an official release as "Industry Advocate within the WPB." And it is particularly disturbing to go through the tunnel from the Social Security Building to the Railroad Retirement Building across the street, and find a drafting room busily designing fifty new forms per day.


The War Production Board labors under the handicap of a tremendous turnover in executive personnel. A new man comes in and a job is tossed into his lap. There is little precedent to guide him. He is accustomed to doing things differently than the man at the next desk, and a new series of forms is born, essentially paralleling another series already in use.

Even more serious is the turnover of ideas and policies to cope with the changing conditions under which WPB must direct the industrial effort. And it is this instability of objectives and methods which has kept internal procedure in a turmoil while it has imposed an incalculable burden of paper work on industry which should be concentrating on production. The thirty million man hours was only a beginning.

It required the services of 1300 clerical workers, operating in three shifts, and many of them two to a desk, to handle PRP applications before they reached the stage of executive or administrative consideration, and PRP was a miniature dress rehearsal in comparison to the job that CMP will entail if it is to be properly done.

We are primarily concerned with the Red Tape problems as they affect industry, but experience shows that snipping at those strands is relatively a futile measure. Red Tape springs from internal policy and procedure, and it must be cleaned up by working from the inside out. No one questions the necessity for accurate and detailed reporting, but that effort can be largely wasted unless internal procedures are such as to use it effectually. The complaints from industry in this crisis when all must work together, arise not from the effort itself, but from the waste and suspicion of waste entailed in the effort. And the responsibility for that waste is at headquarters.

The Army Services of Supply have set an excellent example of determination and intelligent self-analysis by starting their campaign right within their own family circle, and it is already showing results. Red Tape must go! It *can* be done.



***Red Tape, like charity,
generally begins
at home***

(Photos by Office of War Information)



HAROLD BOESCHENSTEIN
President and General Manager of the Owens-Corning Fiberglass Corp., Toledo, Ohio, who is responsible for maintaining a workable balance between available materials and the enormous demands of a war economy.

INVENTORY CONTROL PROVIDES KEY to MATERIAL BALANCE

Our national material resources can
be put to maximum utilization by
scheduling a continuous flow for
essential end-purposes

By

HAROLD BOESCHENSTEIN

Director of The Controlled Materials Plan

RECOGNIZING that the establishing of a workable ratio between material supply and production needs is an essential factor in fulfillment of the war program, the war Production Board has for some time sought a general formula that will assure continued production without fostering large and unbalanced inventories.

In view of the diverse problems of industry insofar as techniques and production practices are concerned, it has been difficult to establish a rigid policy for the control of inventories. However, from the first development of the priorities system, it became apparent that some regulation of inventories was necessary.

This recognition led early to the inclusion in Priorities Regulation No. 1 of a section which prohibited delivery or acceptance of any material if such acceptance would bring the inventory of the received material "in excess of the practical minimum working inventory

reasonably necessary to meet deliveries of the products of the person accepting delivery, on the basis of his current method and rate of operation."

Obviously this permitted the purchaser a great deal of leeway, and in view of the lack of certainty in the standard established, any effective enforcement was difficult.

Industry has been willing and anxious to cooperate in reducing inventory position to a minimum. On the other hand, industry has been faced with the problem of insuring continuity of production in spite of shortages of materials. It would not be difficult to reason that a larger than normal inventory was necessary to meet production schedules. Buyers in some cases were forced into the position of purchasing larger quantities of particular items than they could use on a contract, merely to obtain the quantities of the items which they



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This copper is destined for use in the manufacture of B-25 bombers, described by General Doolittle as "the best military plane in existence." CMP aims to have such materials ample—but moving into production.

Shelf items of tools and supplies are not covered by CMP's Regulation No 2.

needed. This material accumulated, and placed a financial burden on the holder.

All these conditions were distinctly an outgrowth of the war economy—of the period when transition from job shop to production line assembly methods in war material was being developed, and when emphasis was placed on production at any cost and in any manner, rather than on a balanced program.

When the original priorities system was brought under the framework of the Production Requirements



Plan, there was some improvement in industry's inventory practices. The Controlled Materials Plan will make possible a further improvement in inventory practices since allotments of controlled materials will not exceed the anticipated supply and consumers will have assur-



Stockroom of a western aircraft plant. Inventory controls are designed to keep such stocks at a practicable minimum.

ance of receiving delivery of the materials they order. Under these conditions, a specific inventory control becomes possible.

To accomplish this control, the War Production Board has issued the Controlled Materials Plan Regulation No. 2, which applies to inventories of controlled materials. This Regulation was drafted in the Inventory Control Branch of the Redistribution Division, and will be administered from that branch.

The terms of the regulation are restricted to the three controlled materials—copper, steel and aluminum—in such sizes and shapes as are specified in the regulation.

In general, the regulation forbids acceptance of delivery of any item if delivery would make the consumer's inventory exceed what he will need to put into use during the next 60 days. It cannot be emphasized too strongly that the 60-day provision is a ceiling, and is the maximum which can be allowed at this time, in view of the shortage in supply of the controlled materials. In no event does the regulation authorize anyone to exceed a practical minimum working inventory.

It is hoped that as demand and supply of scarce materials are brought into balance, and all consumers are assured a prompt delivery of the materials required for authorized production schedules, it will become possible for industry to maintain inventory position at a level far below the 60-day ceiling.

CMP Regulation 2 takes a positive approach toward inventory control. Rather than restrict inventory to any percentage of a past period, or gear it to past production, the War Production Board is limiting inventories to the requirements for the 60-day production period ahead.

This is accomplished through the paragraph of the regulation which reads as follows:

"No user of controlled materials, shall, after April 1, 1943, accept delivery of any item of control material if his inventory of such item is, or will by virtue of such acceptance become, greater than the quantity of such item he will be required by his current practices to put into use during the succeeding 60-day period for production, construction, operating supplies, or maintenance or repair, in order to carry out his authorized operations."

This paragraph contains the basic principle and purpose of the inventory control regulation. It is stipulated further that the Director General for Operation may fix periods longer or shorter than the 60 days, and make special provisions for a specific industry or an individual producer, where it can be shown that such action is consistent with sound production practices.

The controls of the regulation are applicable item by item. Acceptance of delivery of any item required for authorized operations is permitted even though the inventory of some other

item may be excessive. An item of controlled material is defined as "any item in any class of controlled material . . . which is different from all other items . . . by reason of one or more of its specifications, such as length, width, thickness, temper, alloy, finish, method of manufacture, etc." (The classes of controlled material include all shapes and forms of aluminum, copper, and copper base alloys, and steel appearing on the CMP Materials List.)

Since the Controlled Materials Plan assures deliveries in sufficient amounts to maintain authorized production schedules and repair and maintenance operations, the item by item inventory control makes possible the balancing of inventories in accordance with production needs and eliminates any incentive to excessive forward buying.

In addition to allowing for special rulings by the Director General for Operations, the regulation permits acceptance of controlled materials in excess of the prescribed limits under the following circumstances:

Minimum Quantities Under CMP Regulation No. 2 (Schedule A)

If a user of controlled materials would be authorized under CMP Regulation No. 2 to accept delivery of a quantity of an item of controlled material less than the minimum shown opposite the appropriate class of controlled material on the following schedule, he may accept delivery of the full minimum amount shown on the schedule.

CMP material code No.	Class of controlled material	Minimum quantities	CMP material code No.	Class of controlled material	Minimum quantities
	ALUMINUM	Pound		COPPER AND COPPER BASE ALLOYS	Pound
	Bar and rod (excluding requirements for stock for wire, forgings, rolled structural shapes, and electrical cable)	500		Brass mill products:	
	(Maximum diameter for rounds and ovals)		3001	(A) Copper base alloys:	
4021	3/8"–3" incl.		3011	Ammunition cups, discs, and slugs	5,000
4031	Over 3/8"–1 1/2" incl.		3021	Sheet and strip (other than cups and discs)	500
4041	Over 1 1/2"–3" incl.		3041	Rods, bars, and wire (incl. extruded shapes, not incl. slugs)	500
4051	Over 3" incl.		3041	Tubing or pipe	500
	(Maximum distance between parallel faces for squares, hexagonals, octagonals & rectangles)		3051	(B) Copper:	
4121	Wire, excluding rivet wire. (Wire covers maximum diameters under 3/8" in rounds, ovals, squares, hexes, octagonals, and rectangles)	100	3061	Plate, sheets, and strip	500
4122	Rivets	25	3071	Rods, and bars, including extruded shapes (not including wire bars and ingot bars)	500
4151	Cable (electrical transmission only)	2,000		Tube and pipe	500
4171	Forgings and pressings (before machining). Castings made from high-grade ingot (before machining)	500	3101	Wire mill products:	
4202	Cylinder heads for air-cooled radial engines			Copper:	
4203	Other heat treated sand castings.			Wire and cable (incl. copper content of insulated wire and cable)	500
4204	Non-heat treated sand castings.			Foundry products:	
4205	Heat treated permanent mold castings.		3201	Copper and copper base alloys:	
4206	Non-heat treated permanent mold castings.			Castings	500
4207	Cold-chamber die castings.			STEEL	
4208	Gooseneck die castings.			Carbon steel (including wrought iron)	
4213	Castings made from low-grade ingot (before machining)	500	3061	Bars, cold finished	10,000
4214	Heat treated sand castings.		3063	Bars, hot rolled	10,000
4215	Non-heat treated sand castings.		2011	Ingots, billets, blooms, slabs, tube rounds, skelp and sheet and tin bars	56,000
4216	Heat treated permanent mold castings.		2016	Pipe	10,000
4217	Non-heat treated permanent mold castings.		2021	Plates	10,000
4218	Cold-chamber die castings.		2026	Rails and track accessories	56,000
4251	Gooseneck die castings.		2031	Sheets and strip	10,000
	Rolled structural shapes (angles, channels, zees, tees, etc.)	500	2036	Steel castings	10,000
4301	Extruded shapes.	100	2041	Structural shapes and piling	40,000
4311	28, 38, 53S, and 61S alloys.		2046	Tin plate,terne plate and tin mill black plate	10,000
	All alloys except 28, 38, 53S, and 61S.		2051	Tubing	10,000
4351	Sheet, strip and plate (excluding stock for foil, impact extrusions, and forgings)	200	2056	Wheels and axles	40,000
4361	28, and 38 alloys.		2061	Wire rods, wire and wire products	10,000
4401	Alloys other than 28 and 38.			Alloy steel—including stainless:	
4411	Tubing	100	2501	Bars, cold finished	2,000
4451	28 and 38 alloys.		2505	Bars, hot rolled	2,000
4501	Alloys other than 28 and 38.		2511	Ingots, billets, blooms, slabs, tube rounds, sheet bar	10,000
4601	Powder	15	2516	Pipe	2,000
4651	Foil (0.004" and thinner)	25	2521	Plates	2,000
4701	Impact extrusions	200	2531	Sheets and strip	2,000
	Ingot (excluding ingot for aluminum castings, sheet, plate, strip, rod, bar, extrusions, and powder)		2536	Steel castings	2,000
4801	High-grade ingot.	2,000	2551	Tubing (incl. pipe)	2,000
4811	Low-grade ingot.		2556	Wheels and axles	40,000
			2561	Wire rods, wire, and wire products	2,000

1. When deliveries are made in advance of scheduled delivery dates under CMP.
2. When notice of change or cancellation of delivery has been given by the consumer to the supplier, and material was loaded or in transit before such notice was received.
3. When notice of postponement of delivery of special shapes has been given by the consumer to the producer, and the producer gives notice that they already are in production at the time of receipt of notice of change, in which case delivery may be accepted of the minimum quantity the producer must complete.
4. When the quantity that the consumer would be permitted to accept under the above rule is less than the minimum indicated in Schedule A of the inventory regulation.

One direct result of the inventory control regulation will be that each user of controlled material will be required to keep a close check on his production and requirements of material.

The regulation does not affect shelf stocks, nor does it affect any materials other than copper, steel and aluminum in the shapes and sizes specified. Actually, however, the rate of use of other materials must inevitably fall into line with the three controlled materials.

The Redistribution Division will continue its efforts

and programs for moving idle and excess materials to persons needing them. The redistribution procedure set up under priorities Regulation No. 13 will play an important role in balancing off the inventories of war industries. Where a manufacturer has more than a 60-day inventory of the materials, affected by CMP Regulation 2, he will not be permitted to accept further delivery until he has worked off the excess.

In the case of other than controlled materials, and of fabricated materials or parts—made from controlled or non-controlled materials—a manufacturer is expected to observe the terms of Priorities Regulation No. 1, stipulating a minimum working inventory. At the same time, manufacturers should work down their inventory position on the basis that under the Controlled Materials Plan their material delivery will no longer be speculative.

The new regulation is expected to lead to the release of large quantities of both materials and fabricated parts. Section of CMP Regulation 2 which governs redistribution of such materials, follows:

"Excess inventories of controlled materials, including inventories of materials which are not in such form as to be usable by the holder, shall be subject to redistribution to other persons by voluntary action, pursuant to Priorities Regulation No. 13, or if necessary, through requisitioning by the War Production Board."

As in the case with all WPB regulations governing broad segments of industry, there are appeal provisions permitting any person who considers that compliance with the terms of the regulation would work an exceptional or unreasonable hardship upon him, to appeal to the WPB Redistribution Division, Reference CMP Regulation No. 2, setting forth the pertinent facts and the reasons he considers he is entitled to relief.



Aluminum production has soared to new high levels, but every pound must be channeled to specified use in war products.

REPAIR of FINISHED

A FEW years back every repair weld on a casting placed a stigma on that casting and left the impression that an inferior article was being substituted. This condition was still further aggravated because marine engineers were progressing towards higher temperatures and pressures and consequently had to demand greater integrity from the component parts making up turbines and other high pressure steam units. Welding had not really come into its own and was usually considered by engineers to constitute a discontinuity in the piece welded, very much as though the deposited material were merely a plug. Admittedly, many of the welds made in castings at that time were not a credit to the welding art, and there are reputedly cases on record of welds "falling out of the casting."

Several changes were brought about which materially altered the welding of castings. Coated electrodes were developed, and specialized techniques of welding heavy castings were introduced. It was soon realized that to weld a heavy casting, while it was cold irrespective of analysis, was inviting trouble. Cracks and spalling were likely to occur even though the same steel in lighter sections was considered readily weldable. The importance of preheating and stress relieving and the judicious processing of the deposition of weld metal was becoming more thoroughly understood. The inevitable result of all these developments was the production of sound welds, superior to the casting being welded.

The developments in welding altered the light in which welding was regarded by marine engineers. It was realized that a sound structure consisting of a welded casting was preferable to an unwelded casting which might contain hidden defects. The Navy Department brought the question of sound cast structures much nearer reality when they pioneered the use of radium for inspection of castings. The outstanding work of Briggs and Gezelius is too well known to require any further comment.

The Bureau of Engineering assumed leadership with

The exacting requirements of naval construction are well served by recent developments in the welding field

Sound castings, fewer rejections, and saving of valuable time are among the advantages

the foundries and shipbuilders is a concerted drive to produce better cast structures. Within liberal limits the Bureau of Engineering would permit the welding of many castings provided the repair was subsequently stress relieved and radiographed. The rejections of castings became fewer and fewer, and without a doubt sounder castings were being obtained. Outright rejection of high pressure castings at Fore River has amounted to less than 4% in the last two years.

The liberal attitude of the Bureau of Engineering towards welding soon produced such developments as cast structures especially designed for welding. At Fore River were developed such castings as the high pressure turbine casing shown in Figure 1. This casing is built up of three separate castings welded into a single unit. The advantages for such a structure are numerous. However, the most desirable feature of this type of design is that it enables the foundryman to position each section in the most advantageous manner for making the casting. Sounder castings must result from such technique.

The welding of such structures as the built-up turbine casings afforded the Bethlehem Steel Company considerable welding experience and necessitated a certain amount of research concerning control and prediction of welding shrinkage. This experience seems to indicate that welding must cause distortion; that this distortion can be controlled and even offset, and finally that we have no cases on record of stress relieving caus-

ing distortion provided the work is reasonably supported and properly heated. This information has since formed the basis for still further developments in the welding of castings.

Even in the best regulated shops a defect will sometimes be revealed when the final machine cut is being taken on a casting. In the authors' opinion rarely are halfway measures applicable to such a condition. The defect must be excavated, repaired by

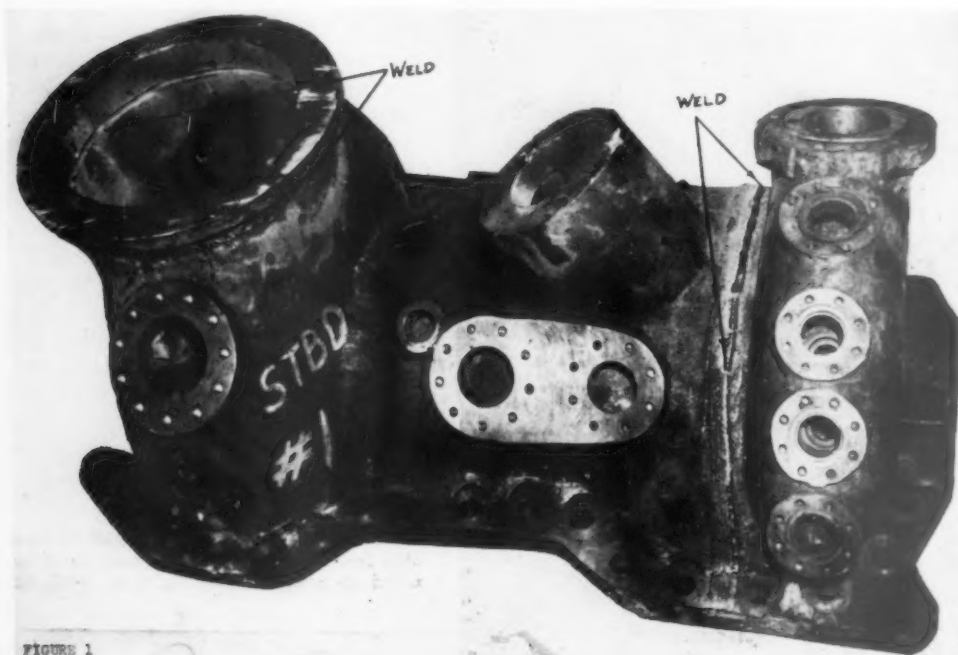


Figure 1.
H. P. turbine casing composed of three castings welded together.

CASTINGS by WELDING

By

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and

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Data and illustrations from a study submitted to the James F. Lincoln Arc Welding Foundation in its recent \$200,000 Industrial Progress Award Program for reports on advances and improvements made by the applications of arc welding in design, fabrication, construction and maintenance.

welding, and the whole casting re-stress relieved. Half-way measures such as seal welding the defect are hazardous. Furthermore, we now have strong indications that at the present operating temperatures the buried defect may creep through the seal weld, producing a leak. Repair by seal welding is then out of the question.

When such a condition arises, the engineer must first determine whether the defect is serious. This can usually be determined only by radiography. It might be well to point out here that the Navy's radiographic standards should not be considered as the sole means of judging the seriousness of such a defect. These standards were developed primarily as a general guide and some of the acceptable conditions "no repairs required" may not be acceptable if in a location of maximum temperature and pressure or at points of stress.

Distortion of repair-welded castings is the result of movement caused by stresses which have been introduced during the course of the repair. The two sources of stress are shrinkage of the filler metal, and differential expansion arising from temperature gradients set up during the various phases of the welding process. Stresses originating from shrinkage of the weld metal are negligible in comparison to the stresses resulting from temperature differential. The magnitude and ultimate effect of thermal stresses are dependent principally upon such factors as preheating, quantity and rate of deposition of weld metal, location of the weld, and method of subsequent stress relief.

The principal metallurgical reason for preheating a casting prior to welding is to prevent hardening and embrittlement of the weld area. But preheating serves

not only to prevent embrittlement, but also to minimize the sharp temperature differential immediately established by deposition of liquid metal. The minimum preheating temperature depends upon the composition of the material and the amount of metal to be deposited. With C-Mn steel a minimum temperature of 400° F is used even when small amounts of repair are to be made. When large amounts of metal are to be deposited, a higher preheating temperature is used in order to allow for heat lost by radiation.

Location of the weld is also a factor in determining ultimate distortion. In a zone where movements become entirely localized, total distortion will be small. But if the zone is located in a position where small local movements become magnified into larger movements at a remote point by mechanical action, then the total distortion will be appreciable.

Although the process of stress establishment is inherent in the welding process, certain measures can be taken to minimize its magnitude and effect. Among these are control of welding rate, and judicious peening. Since distortion results directly from upsetting of the metal adjacent the welding zone, peening of each bead and the immediate surrounding area counteracts this upsetting. In addition, the weld area can be peened sufficiently to upset the metal in the opposite direction by an amount equivalent to the greater contraction which this area would normally undergo on cooling. Some care must be exercised in peening, since the casting has locked-up stresses which might easily lead to cracking.

Stresses locked up during welding are mostly dissipated during the stress-relieving operation. At a temperature of 1100°-1200° F, atomic readjustment and resultant negation of stresses occurs without distortion when certain precautions are observed. The principal precautions are proper support of work and maintenance of slow heating and cooling rates, with periodic soaks. In the stress-relieving operation new thermal stresses can result from non-uniform heating and cooling.

It is generally agreed that 400° F per hour divided by the maximum thickness in inches is a conservative

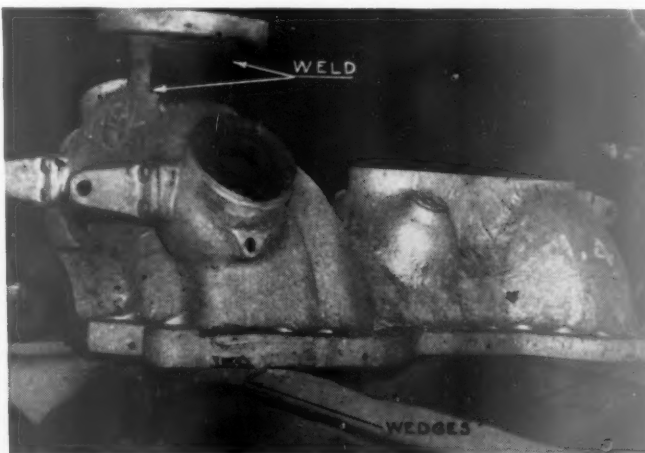


Figure 3.—Repair welded H. P. Turbine casing on furnace car bottom, after stress relieving.

Figure 2.—Steam inlet of H. P. turbine casing after partial excavation of defects found by radiographic inspection.

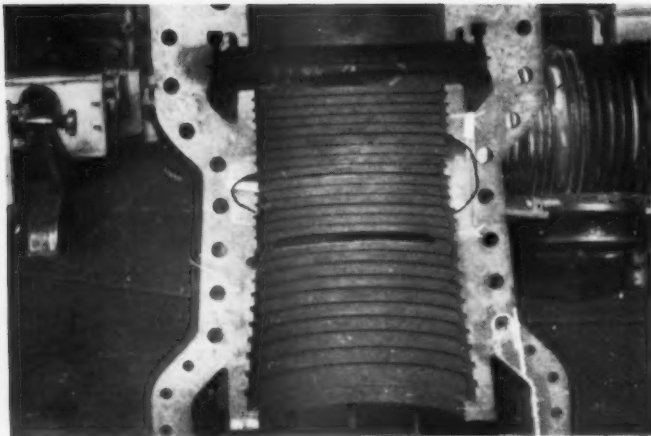


Figure 4.—Rough bored H. P. turbine casing after excavation of defects disclosed during finish machining of flanges.

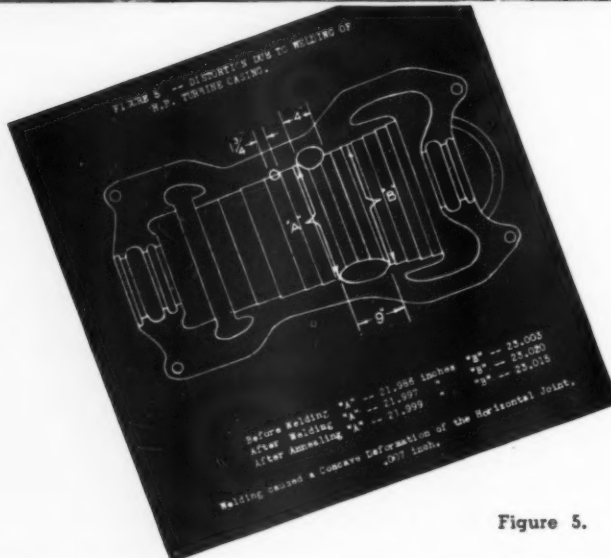


Figure 5.

heating rate, but there is an added factor of safety in employing one-half of this rate and this is recommended in important work. Unlike other heat treating operations, the period of hold at temperature is not a linear function of thickness. Two hours at a temperature is sufficient, for during the first hour the stresses of high intensity are reduced to those of the initially lower value, and after two hours all are reduced to a safe level. The work should not be removed from the furnace on the way down until a temperature of 400° F is reached, in order to avoid new thermal stresses.

Another point frequently raised is that oxidation or scaling is a factor to be considered. In a gas-fired furnace the losses of actual steel from scaling at the usual stress-relieving temperature have been negligible. Nothing other than a fine red powder has ever been observed. Even in electric furnaces operated without atmospheric control the amount of oxidation at 1200° F is not excessive. Cleaning by kerosene or other measures removes the loose oxide and presents a surface equal to the surface of any turbine which has been run for some time.

In regard to actual repair of defective castings, the following paragraphs describe procedures used on three groups of castings. With the first group, a certain amount of distortion could be tolerated, and no special precautions to avoid distortion were therefore required. The second group represents castings where re-machining could be used to correct a limited amount of distortion. The third group is representative of finish machined castings where no machining could be per-

mitted after repair welding. Weld distortion with this group, therefore, had to be minimized and subsequently eliminated by means other than machining.

With respect to the first group of castings where a small amount of distortion can be tolerated, Figure 2 shows the high pressure steam inlet of a high pressure turbine where radiographic examination disclosed a defect, shown in the photograph after excavation. Since this location is in the region of maximum temperature, and since the stresses on the neck of the inlet pipe are usually rather indeterminate due to effect of connected steam lines, a complete excavation of the defective area and a sound weld were necessary. In this case minor distortion could easily be accommodated even if it meant refacing the inlet flange. Special precautions for this repair, therefore, were not necessary. The casting was positioned for downhand welding and preheated over a generous area to 400° F. The welding was deposited in and around the sides of the cavity, rather than uniformly filling the cavity. Each layer was peened partially to offset the welding shrinkage and to insure slag removal. Measurements were taken between the flanges of the inlet and the flanged joint of the casing before, during, and after welding. After welding, the casting was stress relieved at 1250° F. It was not necessary to use an elaborate jig to support the casting. It was placed on a car bottom furnace and supported at various points with steel wedges as shown in Figure 3. After stress relieving, measurements showed that the casting had distorted less than .001" at any point. There was slight tarnishing of machined surfaces and the paint on the casting was burned off; otherwise there had been no ill effects. The casting, however, was now definitely sound and no trouble from a hidden defect would occur.

Figure 4 represents the second group of castings where distorted areas can be re-machined after repair. When the final cut was being taken on the flanges of this turbine casing, two cracks were disclosed which were not visible when the casting was rough machined. The casting had been rough but not finish bored. The bore was still 1/16" oversize, so warpage could be permitted which was within this limit. It would also be a simple matter to take a light cut off the flanges.

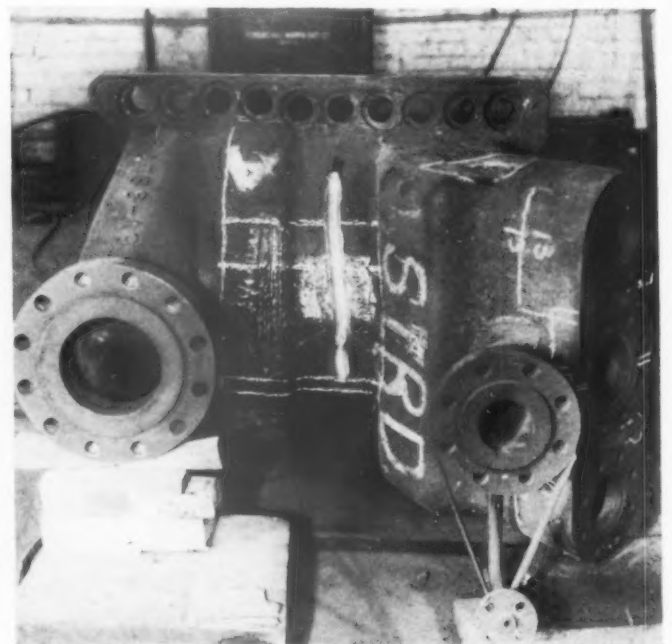


Figure 6.—Partial excavation of defect in H. P. turbine casing.

After cleaning out the cavities, weld metal was deposited approximately in the same manner as in the previous casting, and the usual precautions of preheating and cleaning were followed. The welding caused a convex deformation of the horizontal joint of approximately .007". The bore of the casting also tended to widen, by approximately .012". It can be noted by referring to Figure 5 that a slight recovery was obtained in the "B" reading in the bore after stress relieving this casting. After completion of the repair, the horizontal joint was re-machined to eliminate the concavity of .007" and the casting was then finish-bored.

Another example of repair welding, where a small amount of distortion can be corrected by re-machining, is represented by an H.P. turbine casing shown in Figure 6. In this casting defects were present in the wall midway at the third staging, and also in the walls of steam chest. After removal of defects, welding was performed on the preheated casting. Each layer of weld metal and adjacent area was peened, and a total of thirty pounds of weld metal was deposited. The casting was stress relieved at 1200° F. for two hours. Measurements after welding showed a high spot of .006" on one flange. A grinding operation restored required flatness.

An example of repair where no machining is permissible after welding is represented by an I. P. turbine casing shown in Figure 7. It can be noted that four rows of blading are in place. Distortion therefore had to be minimized during welding and then eliminated by means other than machining. Defects in this casting were located within the "T" slot in way of impulse blading. The defects were so extensive that removal consisted essentially of cutting the casting in two except for the flanges. Figure 7 shows some of the excavation underway. This was continued along the slot shown. Prior to welding, measurements were made as indicated in Figure 7, for convenience called "flatness" measurement and "C" measurement.

The casting was preheated to 400° F for welding. Peening of each layer of weld metal and surrounding

area was practised as previously described. Approximately fifty pounds of weld metal were deposited. After stress relief at 1050° F for four hours, measurements showed loss of flatness of .014" in a length of seven feet, and a contraction of .005" across the "T" slot. It can be seen from the photograph that the contraction across the slot is the action which caused loss of flatness in the flange. In this casting, the width or diameter of the bore did not change beyond the small permitted tolerance.

Distortion was corrected in a manner shown by Figure 8. The casting was supported on blocks, and the small end of the casing was loaded so that the metal behind the "T" slot was put in tension. Peening of this area, as shown in the photograph, caused the metal to spread in a direction with the applied tension, which was opposite to original weld shrinkage. Peening was continued until measurements showed that distortion was eliminated. The stress relief treatment given this casting did not cause any dimensional return, but in other cases it has been found necessary to straighten beyond the point finally desired, thereby allowing opportunity for slight dimensional return in stress relieving.

In summary, it has been shown that large castings with large areas of finish machined surfaces, whose flat-



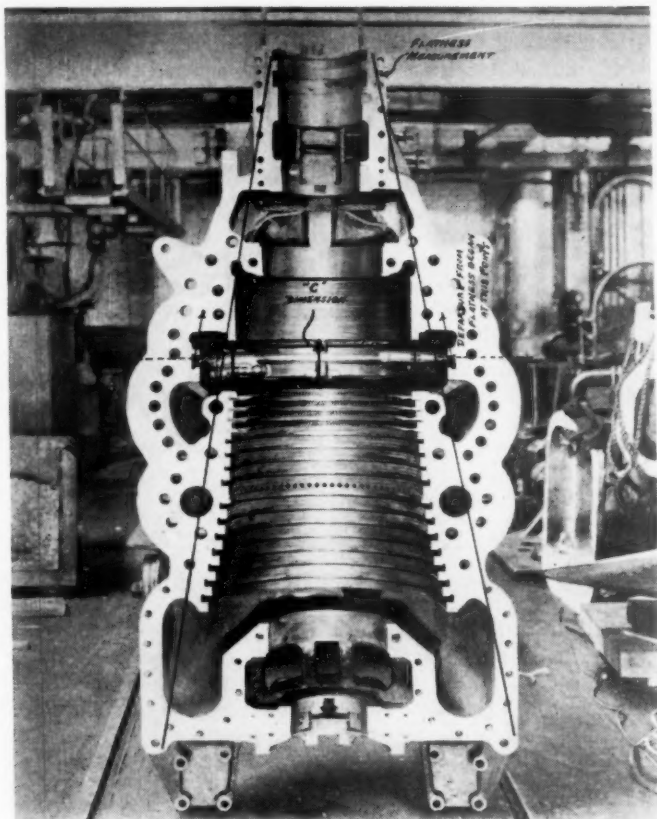
Figure 8.—Method of restoring distorted turbine casing to required flatness limits.

Figure 7.—Partial excavation of defect in H. P. turbine casing.

ness and dimensions are required to be maintained within close limits, can be successfully repair welded. Castings up to seven feet in length and weighing two tons have been repaired with as much as fifty pounds of weld metal added. Although problems connected with repair have differed somewhat with each particular casting, observance of precautions previously described and use of approved welding technique have made it possible to repair successfully castings which in former years would have required rejection.

Actual cost savings which may be attributed to these methods of repair cannot be evaluated. The saving for any one casting would of course be the cost of all handling, laying-out, and machining which had been expended on the casting prior to discovery of the defects, less the cost of the repair by welding. These factors will vary from one casting to another. Another factor which must be considered even more than monetary saving, especially since Pearl Harbor, is the saving in time which may result from the repair. Outright rejections of machinery castings must be held to a minimum if the orderly progress of ship construction is

Continued on page 230



RAW MATERIAL



QUALITY CONTROL

EXCEPT for one or two excursions into background and other influencing factors, this review is limited to considerations of the job of stating in the most desirable form what shall be the quality requirements of items of purchased raw materials for a manufacturing concern. Discussion will, therefore, be confined to the duties, in connection with the above-described operation, of the purchasing and engineering people; although an article on the broader aspects of the incoming flow of raw materials in the desired quantities, of the desired quality, and at attractive prices would necessarily include the cooperative duties of a team of four: engineering, stock maintenance, purchasing, and inspection. Teams are supposed to have coaches, but this dignitary in general has already had so much (favorable or adverse) public attention, that we shall leave him out of the picture here.

Before these requirements can be stated, they must be determined. The initiation of this work, the ultimate decisions connected with it, and the main bulk of the effort involved in between, falls upon the engineering force. In developing these requirements, contact and exchange of intelligence with present or prospective suppliers are many times essential (for would the face of the engineer who specified a quality requirement that could not be met by suppliers at any price be red). It is usually desirable, and required by established company policy in most cases, that such contacts be made through the Purchasing Department. The value of the purchasing man's assistance in this respect can be inestimable. He has had previous experience in similar and in other diverse but analogous cases. He can help get the engineer into contact with the right men in the right supplying companies. And in many cases he can answer questions without sending them to outside people, thus saving the engineer time and trouble.

Factors for Consideration

In determining what the quality requirements of a given item or group of related items are to be, the engineer must consider the effect of the quality of the

raw material items on the quality of the product to be manufactured out of them, on the cost of the manufactured product, on the salability of the manufactured product, and on the manufacturing facility.

In stating these requirements, once they are determined upon, he has to consider the factors of (1) accuracy, (2) understandability, (3) economy or ease of maintaining and applying them clerically, and (4) legality. Accuracy and understandability, if not up to par, could result in a disagreement between the supplying company and the buying company's Inspection Department as to the acceptability of a given lot, due to mistinterpretation of one of the quality requirement statements. Understandability or the lack of it could cause confusion or wrong action and the consequent unnecessary manufacturing costs on the part of members or departments of the engineer's own company. Ease or difficulty of maintaining and applying them clerically can make appreciable difference in manufacturing costs.

And legality is important in more ways than one, though possibly not so frequently violated. In case of a disagreement between suppliers and purchaser due to equivocal specifications as noted above, the purchaser could be held responsible for the acceptance of material he did not want, because after all a purchasing order is a legal contract, binding upon both parties to it. Patent infringements might be caused or aided and abetted. And violations of registered or copyrighted trade names might easily result from carelessness here.

Formal Specifications

The following are recommended principles to be observed by those responsible for the statement of raw material quality requirements in a manufacturing concern of large enough corporate structure to require the purchase of a large variety and volume of raw material items.

A. Kind of Statements.

1. (a) Where the volume or value of a given item or group of related items is considerable; (b) where a

large number of similar items are to be purchased under a single generic head, such as laminated phenol plastic materials of a hundred different sizes, shapes and composition variations; or (c) where the complicated nature and importance of the quality requirements and the prescribed methods of testing therefore necessitate a description of more than a few lines of ordinary printing in length: a formal, serially numbered, properly entitled specification should be established. This will enable the formal specifications, containing the full and lengthy description, to be maintained in a separate file, and to be revised as necessary without affecting other records except to revise the date and issue number of the specification referred to therein. Other stock and purchasing records and the purchasing orders can be kept brief by indicating thereon the generic name, reference to the governing specification and only such other specific information, as grade and dimensions, that may be required.

Within the plant, it is generally found that for every score or more of people who have occasion to refer to the stock record containing a brief descriptive designation, only one will be required to know or look up all details of the quality requirements. Thus the cost of maintaining numerous lengthy records is minimized.

2. Where the complete description of the item can be compassed in a few lines of ordinary printing, only the ordinary and widely-distributed stock record should exist as the statement governing quality, and this should be complete on every copy of the record.

Fourteen Basic Principles

B. Formulation of Statement.

In the formulation of the statement expressing the quality requirements of the desired items of raw material, there are fourteen points which the engineer should always consider and should apply in so far as practicable in each case. Some of these may appear axiomatic. Nevertheless, they are essential and are included here to complete the list.

1. The description should be as brief as possible while accomplishing its purpose and conforming to all other requirements of this list.

2. It should be complete, unequivocal, self-explanatory, and, except in some cases for reference to a formal specification by number and issue number or date, self-contained. This rule is important not only because it follows the dictates of common sense, but because a raw material description, in addition to being a commercial and legal ordering description, is also a cataloging, indexing and identifying description, referred to many times a day by many people from clerks and engineers other than the originator to foreman and superintendents, occasionally even a vice-president.

3. It should give the generic name of the material desired. Moreover, within the phrase indicating the generic name, the key word for alphabetical indexing should be given first. Thus: "Steel, sheet," instead of "Sheet steel"; "Screw, cap," instead of "Cap screw"; etc.

4. It should include a statement of all quality requirements necessary to be incorporated in the raw material in order to make the article processed from it conform to all details of manufacturing design, drawings, layouts, standards of specifications.

5. All unnecessary quality requirements should be omitted. This is to avoid making it more difficult or costly than absolutely necessary to obtain the item.

6. On the quality requirements that are specified, the limits, or allowable variations in acceptable material above and below the specified numerical magnitudes, should be set as tight or close as may be demanded by genuine design or manufacturing needs, *but no tighter*. This is for the same reasons as outlined above.

7. Where code numbers are used in a description, the series of which the number is a member should be specified without exception. For instance, "Varnish, No. 84," is without meaning except to too small a number of individuals; whereas "Steel, bar, SAE No. 1020," is self-explanatory.

8. Unless unavoidable, quality requirements that cannot be inspected for should not be specified in a description. For instance, it would be impossible to determine correctly at the point of delivery how much moisture an item of paper contained when it was taken off the supplier's making machine, or to evaluate the magnetic properties of steel bought in the form of one-inch strips if the method of testing for those particular properties required the use of a sample two inches square.

9. The methods and conditions of testing materials for the various stated quality requirements should be specified, except when the same are unmistakably understood to be conformable to customary practices. Otherwise, there is too great an opportunity for dispute between the Inspection Department of your company and the supplier as to what test method prevails for each given quality requirement.

10. Wherever possible, a commercially available article should be specified. Usually it is of no use to specify an article that is not commercially available unless the quality requirements are sufficient to justify a special manufacturing run by the supplier—and then only where it is a known fact that the supplier can produce the desired article even by means of a special run. In some cases, special selection of the supplier's stocks may serve to avoid this difficulty, but such a step is not always possible and is seldom desirable.

11. Brand or trade-marked articles should be specified only when necessary or desirable because of special considerations. Their use should be avoided in other cases so as to enable the Purchasing Department to buy competitively on all possible items.

12. Wherever possible, standard commercial sizes, grades, qualities, packaging, etc., should be specified.

13. A glance through the company's raw material index will indicate whether there is already carried in stock an item that is closely similar to a proposed new item and that can be inexpensively converted. If there is, the existing item should be specified, and a means provided for converting it, so as to avoid the unnecessary cost of stocking two nearly duplicating items by the company.

14. If the company has any regularly established policies that affect the administration of raw material quality control, they should by all means be observed. For instance, one company large enough to have manufacturing plants in different cities may have an adopted

Continued on page 204

Writing the specification is a joint responsibility of the purchasing and engineering departments

By ALFRED W. POND

PURCHASERS MAY AVOID LEGAL PITFALLS

FUNDAMENTALLY, a legal pitfall is a treacherous business situation not readily discernible by one not having accurate legal knowledge, and likely to result in disastrous legal controversy.

As an elementary illustration we shall review the higher court case of *Empire v. Jones*, 9 So. (2d) 513, reported August, 1942.

Before explaining the cause and outcome of this legal controversy it is proper to direct to the attention of readers that very frequently sale contracts specify that the merchandise is sold "f. o. b. seller's plant".

It is important to know that when a contract contains this stipulation the purchaser *always* is solely responsible for loss of or damage to the merchandise during its transportation. If the damage is caused by a common carrier the purchaser must collect from it, and **without** cooperation of the seller. In other words, the seller's responsibility ceases when he delivers to a common carrier merchandise conforming in quality to the terms of the sale contract which contains constructions to ship f. o. b. the seller's plant or city.

Damage in Transit

Now, testimony given in this case proved that a buyer and a seller entered into a contract of sale for 3,000,000 "All-Hard Common Brick for facing purposes" at the price stipulated in the contract. Evidence was presented which proved that the brick were handled at the plant of the seller by men wearing rubber gloves, taking two bricks at a time in each hand. The brick was loaded and packed in straw on freight cars, 20,000 brick to each car. They were transported 500 miles over two railroads. It is important to observe that the contract stipulated that the brick was sold f. o. b. the seller's plant.

Controversy developed when the purchaser refused to pay for the brick on the contention that many brick were chipped and the brick were not according to sample, which necessitated "culling" and the use of the culled brick for backing-up and for chimney.

During the trial testimony was given to the effect that the purchaser purchased the cheapest brick manufactured by the seller. The brick was known as an "All-Hard Common Brick" and was sold according to sample.

In view of this testimony the higher court held the

purchaser liable for full payment of the brick, and said:

"The contract between the Southern Fireproofing Company (purchaser) and the Empire Brick Company (seller) stipulated that the brick was sold "net f. o. b. Plant at Ceramic, Alabama," and hence, delivery to the carrier at that plant was delivery to the purchaser of the brick. The testimony shows that brick will inevitably chip when transported by railroad, particularly where the distance the brick is transported is as great as the distance was in this case. And there is nothing in the record to show that the chipping which rendered the culling necessary was not caused by the handling of the brick *after* they were delivered by the Empire Brick Company (seller) to the railroad company."

It is important to know that the purchaser may have avoided the "legal pitfall" in this case, which resulted in an adverse verdict, if the contract had specified f. o. b. the purchaser's delivery plant. Under these circumstances the duty would have rested upon the seller to deliver brick to the purchaser in good condition and, therefore, not chipped brick. In other words, the seller would have been obligated to reduce the contract price in consideration of the damaged condition of the brick, or the purchaser could have refused to accept delivery of the damaged brick and demanded that the seller comply with the contract and deliver the quality of brick specified in the contract. Obviously, the seller would have had the opportunity to collect its damages from the carrier upon proof that the damage was caused by the carrier.

Discount Also Lost

Another important point of law decided by the higher court in this case relates to discounts. And not only was the purchaser compelled to

accept damaged brick but, also, he forfeited the agreed discount for prompt payment because the contract specified shipment f. o. b. seller's plant.

The above mentioned contract specified the payment of \$8.00 per thousand for brick shipped and delivered, with a further provision of allowance by the seller of a 25 cents per thousand discount if the payments for the brick were made by the purchaser prior to the 15th of the following month. In other words, under the terms of the contract, it was agreed that the price of the brick would be \$7.75 per thousand if the brick were paid for previous to the 15th of the month following

Foresight based on accurate knowledge of the legal implications of your contracts can save costly court actions and adverse decisions

By LEO T. PARKER



the date of shipment, otherwise the price of the brick would be \$8.00 per thousand.

The legal question was presented the court, as follows: Was the purchaser entitled to the specified 25 cents per thousand discount where he was willing to make payments before the 15th of the month but he did not do so solely because the amount due the seller was disputed and, therefore, had to be decided by a court?

It is interesting to observe that the higher court held that the purchaser was *not* entitled to this discount, and said:

"Since we have found that the claim of the Southern Fireproofing Company (purchaser) for damages is not meritorious and that on the other issues involved in the case the evidence sustains the plaintiff's (seller's) demand, the trial judge did not err in rendering judgment in favor of the plaintiff (seller) for the full amount alleged to be due."

What is Enforceable Contract?

Modern higher courts hold that a valid contract is an agreement between two or more parties, firms, or corporations by which each is *expressly* or *impliedly* obligated to do *something*, not prohibited by law, within a predetermined period. Ordinarily valid contracts need not be in writing, excepting certain kinds of contracts that relate to real property, suretyship and a few others that are required by state laws to be in writing.

An "expressed" contract is an agreement whose exact terms and conditions are thoroughly understood by both contracting parties. An "implied" contract is one where the own *presumes a promise or obligation* on the part of one party or both parties to the contract.

Both "expressed" and "implied" classifications of contracts are enforceable. The important element in litigations involving implied sale contracts is that always either the buyer or the seller contends that no valid and enforceable contract existed.

The same condition usually arises when a contested verbal contract is being litigated. And, if the court decides that a valid and enforceable contract existed, the purchaser is liable in damage to the seller for the profits the latter would have earned had the purchaser not breached the contract.

For example, in *Purvis & Bertram v. Shaw*, 164 S.W. (2d) 416, reported August, 1942, a purchaser contended that he had made no contract to purchase sand and gravel. However, the seller filed suit to recover damages and contended that the purchaser had breached a valid contract.

The seller testified that the purchaser asked him to bid on furnishing the sand and gravel for a job that he intended to get and that he agreed to furnish the sand and gravel for \$2.50 per concrete yard. The seller testified further that the amount of material was to be determined by the engineer when the work was completed, and that the purchaser accepted this proposition, *provided the purchaser*, who was a contractor, got the job. The seller also testified that the purchaser, or contractor, got the job but failed to fulfill the terms of the contract.

Much conflicting testimony was presented by both the seller and the purchaser, but the jury decided that a valid contract was made, and that the purchaser had breached it. The contractor appealed to the higher court, which up held the verdict rendered by the jury and held the purchaser bound to pay to the seller an amount equal to the profits the seller would have earned had the purchaser not breached the contract. The court said:

"Much of the testimony is devoted to the contentions of the respective parties as to the facts about whether the parties ever entered into a contract. The testimony adduced by plaintiff (seller) indicates that the contract was made; the testimony offered by defendant (purchaser) is all to the contrary. The jury verdict resolved the disputed points against defendant."

Also, see *Hollerbach & May Contract Company v. Wilkins*, 130 Ky. 51. Here a seller contracted to sell a stipulated quantity of merchandise to a purchaser and the latter breached the contract of purchase. It was held that the purchaser could not escape payment of profits the seller would have made by full performance of the contract by the purchaser.

Modern higher courts hold that when a purchaser of either an expressed or implied breaches a contract the seller may decide upon one of three remedies: (1) to

hold the merchandise as the property of the purchaser and sue for the contract price; (2) retain the merchandise as his own and sue for the difference between the contract price and the market value of the goods at the date fixed for delivery; or (3) the seller can sell the merchandise at a fair sale and sue for deficiency, or his full financial losses.

Law of Expressed Contract

Generally, the courts will not permit parties involved in a written expressed contract litigation to introduce any testimony relating to verbal agreements intended to vary the meaning of the written contract. In other words, the written contract is final. And, the fact that a seller may accept payment on a basis lower than that specified in a written contract does not affect his legal right to subsequently sue and recover full payment, as based upon the written contract. This legal pitfall generally, is costly to the party in error.

For instance, in *Kentucky Virginia Stone Company v. Casteel*, 165 S.W. (2d) 348, reported November, 1942, it was disclosed that a person, named Lewis, and a purchaser entered into a written contract which contained a clause stating that Lewis agreed to perform specified services for the sum of sixty five cents (65¢) per ton.

In a statement attached to the check sent to Lewis the amount due was calculated by the purchaser at the rate of 40¢ a ton. Thereafter checks were delivered to Lewis with itemized statements attached showing the number of tons a check paid for on the number of tons calculated at 40¢ a ton. The contract was completed about August 1, and on August 3 the company mailed to Lewis a check for \$226.90 calculated at 40¢ a ton for the final amount. However, Lewis refused to accept the check in final settlement and returned it to the company.

Lewis filed suit against the company to recover the difference between 65¢ and 40¢ per ton for all materials. The counsel for the company alleged that the above mentioned written contract had been altered by a verbal agreement, and that acceptance of the 40¢ per ton various payments was definite proof that Lewis intended to accept 40¢ per ton as full payment.

However, it is interesting to observe that the higher court held the purchaser liable for payment at the rate of 65¢ per ton.

Another important point of law is that ordinarily a purchaser is bound to pay the full price specified in a contract although the seller accepts and cashes a check from the purchaser having written there on such negotiations as "The payee accepts this check in full payment to date", or "Account paid in full", etc.

The law is well settled that only when the account is openly *disputed* by the seller will acceptance of a check, having such notations thereon, relieve the purchaser from making full payment according to the terms of the contract. If, however, the buyer and seller have disagreed regarding the amount due, the purchaser has disputed the seller's price, the higher court hold that acceptance of *any amount* by the seller is full payment if made with the understanding that it is intended by the purchaser to constitute full payment.

Many persons believe that a written contract is not valid unless signed in ink, and others believe that the correct names of each contracting parties must be signed on a contract in order to constitute a valid and binding agreement. Obviously, such beliefs are legal pitfalls.

The law of signatures is interesting. Contrary to the opinion of a majority of readers, modern higher courts hold that any form of a signature such as those made with a rubber-stamp, pencil, typewriter, symbols, initials, and the like, may be valid and result in an enforceable contract.

Signature Validity

For example in the leading case of *Mayers v. McRimmon*, 53 S.E. 447, the higher court held that a Purchasing Agent may bind his employer to a contract simply by signing the latter's name with a rubber-stamp. This court said:

"Where the name required has been so placed by one having authority to do it and with *intent* to endorse the instrument, the authorities hold that this is a valid endorsement."

Also, the same law is effective where a purchaser affixes his signature with a typewriter *when intending* to make a valid contract. See (195 Pac. 316). And, again, if a purchaser or authorized employee signs a contract using only initials, the contract is valid if the purchaser intended to be bound when the signature was affixed.

If a contract is valid, the question often arises: When and under what circumstances may the other contracting party cancel it?

Simplifying the law on this subject we may state that it is well established law that *all* parties to a valid contract are *bound* to fulfill the *precise* terms of the agreement, and if one party fails in this respect he performs an illegal act which entitles the other party to do either of these three things: (1) he may refuse to continue to perform his obligations and sue the other party for damages and profits in an amount equal to his financial loss resulting from the breach; (2) or, he may file suit and compel the other party to fulfill the exact term of the agreement; (3) or, the parties may mutually agree to cancel the contract or make a supplementary contract.

Breach of Contract

Of course, a considerable number of litigations have arisen over the question: When and under what circumstances does a purchaser breach a contract?

Generally speaking, a legal breach of a contract is *any* act in violation or contradictory to the terms of the agreement. It is important to know that neither party is entitled to recover damages based upon a breached contract, unless the testimony clearly indicates that *actually a breach occurred*.

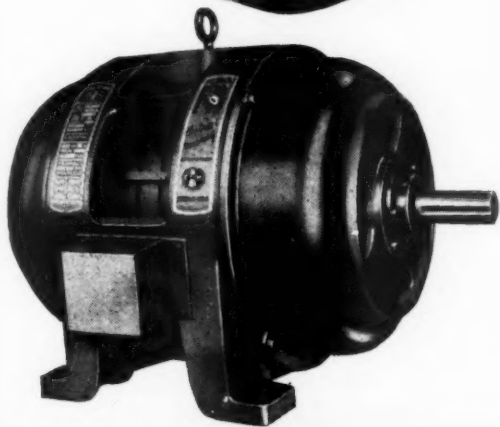
For illustration, the mere fact that a party states that he *intends* to breach a contract, or performs acts intimating that he will breach the contract, is not sufficient justification for the other to recover damages, unless a breach *actually* occurs.

For example, *Clark v. Miller* 122 So. 475, it was

Continued on page 218

Good intentions are not a sufficient defense when contracts are contested in the courts of law

When You Can't Buy 'em **BIG**—Buy 'em **GOOD!**



REALLY, it's no hardship when you have to buy smaller motors. *You save money.* But remember, when you can't buy 'em big—buy 'em good.

Now that you cannot depend on oversize to take your motors through tough service—you must depend on quality.

That is why you should investigate Fairbanks-Morse Motors with *Copperspun* Rotors.

The winding of the *Copperspun* Rotor is centrifugally cast of COPPER in one piece. It provides electrical and thermal characteristics that give this motor the stamina to stand up under the most severe service without mechanical failure. You can operate a Fairbanks-Morse Motor with *Copperspun* Rotor at its full rated capacity continuously and indefinitely without fear of damage from overloading.

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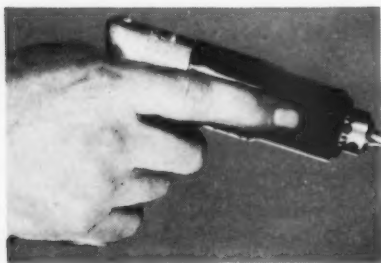
WATER SYSTEMS
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AIR CONDITIONERS
RAILROAD EQUIPMENT



Motors

New PRODUCTS • IDEAS

TWO-POUND PNEUMATIC DRILL



■ Lightweight pneumatic drill manufactured by the Ingersoll-Rand Co., New York, weighs less than two pounds. Because of its light weight and "fit the hand" pistol grip, it is said that the drill can be used hour after hour without fatigue, and for this reason it has proved an ideal tool for women operators. Drill is powered by a "Multi-Vane" air motor. It is finding wide application in war plant production lines. Built-in speed regulator can be set for desired performance. Lubrication is by automatic oiler.

DOUBLE LOCKER ROOM CAPACITY

■ New locker rack in the Vogel-Peterson Company's (Chicago) wood line of wardrobe equipment is said to double locker room capacity, or units can be installed near employees' point of work. Unit is built of hardboard and plywood and accommodates 12 employees, providing each with a coat hanger (ample spacing), individual hat shelf space, and 12"x12"x12" lockbox.

PORTABLE FORCED INDUCTION PUMP FOR HEAVY MATERIALS

■ Portable forced-induction pump, announced by Lincoln Engineering Co., St. Louis, Mo., will pump directly from container to point of application, such materials as sealing compounds, sound deadeners, insulating materials, putty, viscous greases, heavy lubricants, etc. This handling is made possible by what is termed the Lincoln "Pile Driver" which embodies the forced induction priming principle.

SPIRAL-SCREW DRYER

■ Small steel parts capacity of Salix Dryer, devised by Salem Engineering Co., Salem, Ohio, is said to run up to 9,500 lbs. per hour. Materials are conveyed through the dryer by means of an internal spiral screw which deposits them at the opposite end from which they are received; materials are tumbled as they are dried. Drying is accomplished by hot air blown into drying drum. Dryer is equipped with automatic temperature control, variable speed drive, and is designed for drying wide range of products where temperature requirements approximate 400 deg. F. Individual feeder can be used or dryer may be used with continuous line of other equipment.

PRECISION CLEANING MACHINE FOR SMALL PARTS



■ Portable Heavy-Duty precision cleaning machine has been put on the market by the L & R Manufacturing Co., Newark, N. J., for the cleaning of small jeweled bearings, ball bearings, extruded metal parts, small motor assemblies, pinions, watches, diaphragms, cylinders, and so on. It is claimed that cleaning jobs formerly requiring large trained staffs are now but a matter of 10 to 15 minutes with the aid of these machines. There are two types. With the Heavy Duty type additional baskets may be used, permitting segregation of parts. This type also has controlled reversing action.

VITRIFIED CERAMIC STORAGE BATTERY CASE



■ Vitrabloc is the name of a new line of storage batteries developed by the Storage Battery Division of the Philco Corporation, Philadelphia, Pa., in which rubber construction has been replaced by a vitrified ceramic composed entirely of non-critical materials. The new batteries are announced "not as a substitute but as a permanent improvement to the Philco line". The jars are pure white in color, and have a fused glazed surface inside and out. It is claimed that the jars, like glass, do not absorb moisture, that they are impervious to acid, and free from shrinkage. Because of its glassy surface and spray-proof funnel vents the jar is easily kept clean. Vitrabloc is said to be explosion-proof.

ARC ETCHING MACHINE

"Gorton Spit-Fire Electric Etching" is the name of a new, improved electric arc etching process for permanent identification of parts, tools, etc., developed by the George Gorton Machine Co., of Racine, Wisc.

Due to extension arm design, it readily handles etching in previously inaccessible places, such as inside a cylinder, cavity, or along both side of a V-block, etc.

It is adaptable to etching an almost endless variety of sizes and contours, such as gears, connecting rods, gages, hard-

(Continued on page 100)



WOULD *You*
HALF-RATION OUR
FIGHTERS?

This pile, big as it is, contains *only half enough* scrap to run Youngstown's open hearth furnaces *one day*.

Imagine a pile 20 times this big and you know how much scrap it takes each 12-hour turn to keep all the steel mills going.

Each time this pile goes, another must be ready to take its place—twice a day, every day, until the war is won.

It's the dormant scrap you make available that will keep the nation's scrap pile up. If you slow down or stop your effort to find it and turn it in—if the mills have to do with one pile a day instead of two—then **YOU** must share the hazard of putting the boys in uniform on half-rations of steel!

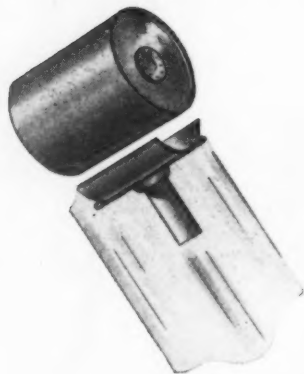


THE YOUNGSTOWN SHEET AND TUBE COMPANY
 Youngstown, Ohio

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When writing Youngstown Sheet and Tube Company please mention Purchasing



"ASH-CANS" TO TOSS AT STEEL SHARKS

SAFE arrival at destination of all types of products, depth bombs, planes, munitions, food, etc., products which the boys are depending on—demand containers that provide adequate protection against rough handling and extreme weather conditions.

General Boxes comply with specifications set up by Government authorities for overseas and overland shipments. They are designed to meet specific shipping problems. Steel binding wires give these con-

tainers the extra strength required for the extremely tough conditions of overseas travel.

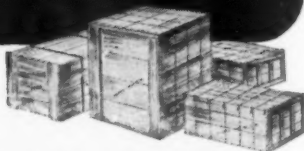
General Boxes conserve man-hours . . . occupy minimum space in ships, trucks, trains and on the shipping room floor. Tare weight is cut to a minimum while handling is greatly facilitated. If you have overseas shipping problems, write us. General Box engineers have had extensive experience in helping war products shippers meet Government packing specifications.

For manufacturers of war products: General Heavy Duty Wire-Bound and Nailed Wooden BOXES and CRATES

For Domestic Service: Corrugated BOXES and Wood Cleated Fireboard CRATES

Discontinued for the Duration: Generalite and Nailed Strapped BEVERAGE CASES

GENERAL BOX COMPANY



GENERAL OFFICES: 504 North Dearborn Street, Chicago, Illinois

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit,

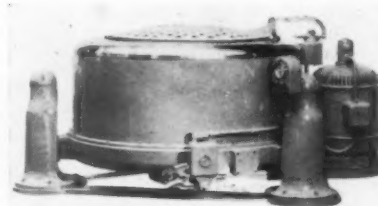
East St. Louis, Kansas City, Louisville, Milwaukee,

New Orleans, Sheboygan, Winchendon;

Continental Box Company, Inc.: Houston, Dallas.

(Continued from page 98)
ened pins, bushings, collets, etc. It has been found ideal for marking the most delicate parts such as .0015" feeler gage stock, up to the largest parts within the capacity of the machine.

SPINNING IN HEAVIER GAUGES



■ Methods for making highly involved spinings* in aluminum, black iron, steel, stainless steel and aluminum magnesium in much heavier gauges than heretofore, is announced by the Milwaukee Metal Spinning Co., Milwaukee, Wis. Requirement for making finished samples for testing, without the need for making dies, and jigs, is only a wood block or form. Example of spinning is the Extractor illustrated, the basket bottom and rim and the cover and shoulder being spun.

STYLED CLOTHING FOR WOMEN WELDERS



■ Complete line of tailored protective clothing for women welders styled according to accepted dressmaker patterns, is announced by American Optical Co., Southbridge, Mass. Made of selected chrome tanned cowhide, the clothing is light in weight, yet is said to give positive protection against flying sparks. Cap is designed to protect the hair, and overalls are styled like women's slacks. Complete line consists of cap, short jacket, coat, overalls, sleeves and 36-inch apron.

NEW FLUORESCENT UNITS FOR WAR PRODUCTION

■ Two new types of fluorescent units featuring a non-metal reflector known as Lumenite, are being produced by the Mitchell Manufacturing Co., Chicago, especially designed for war plants. Lumenite is a composition material, and is said to be tough, strong, moisture and

(Continued on page 102)

When writing General Box Company please mention Purchasing

NO. 2 OF A SERIES

HOW TUBE-TURN
WELDING FITTINGS

BENEFIT WAR
INDUSTRY



Two ways that Tube-Turn welding fittings avoid wasting men and hours in war plants!

1 SPEED-UP PIPING INSTALLATION



2 GREATLY REDUCE MAINTENANCE



After installed, trouble-free piping steps-up production schedules!



TUBE-TURN fittings speed up piping installation four ways: (1) Need only butt-welds, easy for veteran or novice welders. (2) Less lining-up, for uniform walls and true circularity. (3) Sections pre-assembled on the ground save time. (4) Torch cutting and fabricating are eliminated. Tube-Turn fittings are ready to weld in any size and weights for all needs.

You can depend on piping welded with Tube-Turn fittings to be practically maintenance-free, as Tube-Turn welding fittings give the *greatest possible strength and long life*. They're *permanently leakproof*. There are no bolts to loosen, no gaskets to replace, no threads to corrode and weaken.

No plant ever can afford a break-down or production slow-up, but in war-time it's a disaster! The best insurance in the world against trouble in piping systems is *welding with Tube-Turn fittings!*

TUBE TURNS, (INC.) LOUISVILLE, KY. • Branch Offices: New York, Chicago, Philadelphia, Pittsburgh, Cleveland, Dayton, Washington, D. C., Tulsa, Houston, Los Angeles. • Distributors in principal cities.

TUBE-TURN *Welding Fittings*

TRADE MARK

★ OTHER WAR-TIME ADVANTAGES:

SAVES CRITICAL MATERIAL: Absence of many flanges, bolts, nuts and heavy cast steel construction saves many tons of metal in a single piping system.

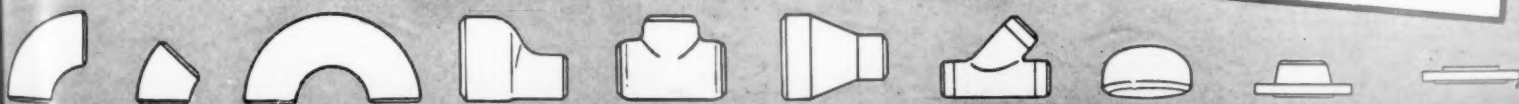
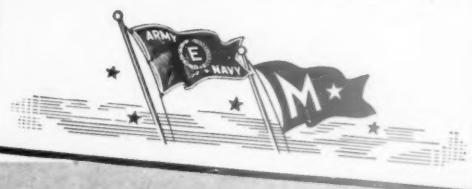
FASTER AND EASIER TO INSULATE: Tube-Turn fittings are insulated as easily as the pipe itself, for the welds form one continuous tube.

SAVE SPACE: Pipe systems welded with Tube-Turn fittings permit streamlined, compact layouts and sharp angles.

LAST LONGER: Smooth inner walls—with no ridges, waves or scale—means less corrosion and longer life.

LESS PRESSURE LOSS: Because of full effective radius and exact O.D. and I.D. alignment with the pipe, the flow is more efficient and pressure loss is less.

FEWER SUPPORTS NEEDED: Since welded piping weighs less and stands vibration better than flanged systems, few hangers or supports are required.



Science Stands Guard over HOLTITE Fastenings



Buy War Bonds

Get in the Scrap

In our modern, completely equipped laboratories, a skillful Engineering Staff working in close cooperation with experienced Inspectors, keeps a vigilant check on the daily production cycle.

Endless research to maintain and improve our high standard of quality assures every user of the finest fastenings science can devise.

Long engaged in war production, we are fully familiar with government requirements and aviation specifications. Knowledge gained in these activities will be gladly shared by working out any fastening problems that may be retarding your production. Send full information. Recommendations will be made, without obligation.

CONTINENTAL SCREW COMPANY

New Bedford, Mass., U.S.A.

(Continued from page 100)

heat resistant, non-corrosive and non-scaling. Reflectors have white glass enamel finish with reflectance efficiency comparable to that of porcelain enamel. High power factor ballast is exposed through top of fixture for cooler operation and longer life. Starter switches mounted on top of unit may be removed without disturbing lamps.

SPRAYS ON—PEELS OFF



■ Waterproof, protective and abrasion-resistant mask being used on plastic glass bomber noses and windshields, is announced by Adhere, Inc., Los Angeles, Calif. Styled Spraymask, the product is applied with ordinary spray gun, and may afterwards be peeled off in a sheet. It is said to be waterproof, to have no chemical action on the plastic, and to be impervious to paint thinners and ordinary solvents. Dries clear and transparent.

INDUSTRIAL POWER TRUCKS



■ Fully automatic clutch and self-shifting transmission feature Salsbury Turret Trucks, new industrial power trucks available in lift, cargo and tractor types, announced by Nutting Truck & Caster Co., Faribault, Minn. The engine-over-drive wheel power assembly is housed within turret. Lift type is of articulated design which keeps loads practically level on ramps and uneven surfaces. The three types are each powered by single cylinder, 4-cycle, air-cooled engine, which provides maximum speed of 8 miles an hour under rated loads.

SHELL CASING DEGREASER

■ Shell degreaser developed by the Phillips Manufacturing Co., Northtown Sta., Chicago, for degreasing interior and exterior of shell casings, utilizes an ingeni-

(Continued on page 104)

A Report on The Steel Valve Outlook

"What's the 1943 delivery picture for steel valves?"

"How can I get quicker shipment?"

"How long am I going to be able to get repair parts?"

"How will valve material substitutions affect me?"

Culled from the mail, these are the kind of questions which prompt this simple, straightforward report on the wartime activities of The Edward Valve & Mfg. Co., Inc.

Here are the facts.

What About Deliveries?

War needs for steel valves have, of course, increased during the past year. Nevertheless we have tried not to bite off more than we can chew. We have tried to set delivery schedules based on facts, not hopes.

Since critical materials are used in the manufacture of steel valves, limitation orders, directives and revised preference ratings have occasionally resulted in minor delivery changes, but *on the whole, we have been ahead of schedule throughout the past year.*

During 1943 we intend to follow a similar policy. We are serious about keeping or bettering delivery promises.

How About Repair Parts?

When a valve user orders a repair part he usually needs it in a hurry. Therefore we put particular emphasis on delivering parts quickly. *At the close of 1942 there was not a single past due repair part order on our books.*

Orders for maintenance parts are naturally increasing since old equipment must last for the duration in many plants. To help keep these plants running we will continue to give preferred treatment to repair part orders, within the limitations of government regulations, of course.

Simplification Cuts Inventories, Speeds Shipment

The war has brought much voluntary valve standardization and simplification. The user, the distributor and the manufacturer are all gainers.

For years Edward engineers have designed for maximum part interchangeability. As a result, *Edward users today need only small inventories of replacement parts.* The new Edward INTEX valves are a case in point. Only a few simple tools are required for maintenance, and parts are unusually accessible and highly interchangeable. Inexperienced men and women can maintain and operate Edward valves.

Equally important, elimination of "specials" makes possible quantity manufacturing and speeds deliveries. Stick with the standard and you'll get your valves much quicker.

Certain valve types and pressure groupings have been discontinued to free additional war production capacity, but

Edward still builds a complete line of steel valves for all land and marine service temperature and pressure conditions. Edward sales representatives are experienced valve engineers. Edward valves are also available through leading industrial distributors the country over, with the full assistance of factory engineering and sales staffs at their disposal.

War Materials and War Workmanship

The materials going into Edward valves today are just as good or better than before the war. Actually, very few material substitutions have been required.

Edward workmanship standards, too, are unchanged. Naturally, with a greatly expanded personnel new supervisors have been created, but virtually every new department head or foreman has been promoted from the ranks where he has had imbued in him the Edward principles of closely controlled workmanship. The addition of much new precision equipment makes adherence to Edward standards even more certain.

Post-War Plans

In the Edward laboratories and design departments, an uninterrupted development program is carried on, pointing the way to new refinements, new products, and new post-war applications.

Since our plant is occupied entirely with the manufacture of standard Edward steel valves there need be no time out after the war for reconversion to peace-time valve production. Further, the Company is a closely integrated organization—a single unit complete in one location—making it relatively easy to change to meet changing conditions, yet making possible rigid quality control.

* * *

The only thing certain about the future is that it will be full of change. Undoubtedly many of your problems and ours will be mutual ones. And whether we are able to meet your valve needs or not, we'll be happy indeed to work with you on any matters concerning the procurement, use, maintenance or development of cast and forged steel valves.

W. F. Crawford

President


The Edward Valve & Mfg. Co., Inc.

Cast and Forged
Steel Valves



East Chicago
Indiana

When writing The Edward Valve & Mfg. Co., Inc. please mention Purchasing

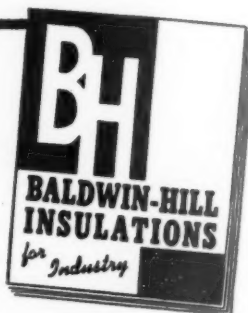


1400° open flame
CANNOT FAZE
BALDWIN-HILL
BLACK ROCK-WOOL INSULATION

THE HIGH-IRON, low-alkaline nature of Baldwin-Hill rock wool is undisturbed by temperatures as high as 1400°. Exposures which completely remove the resiliency and strength from ordinary rock wool, flames which eat right through white wools, don't touch the strength or insulating power of Baldwin-Hill products. Add to that their stability in the presence of moisture, and you have two vital reasons for investigating Baldwin-Hill wools, felts, blocks, and cements—at once.

TO PURCHASING AGENTS EVERYWHERE

It may surprise you to learn that there is this vast difference between different kinds of rock-wool, that the Navy Department and many industrial users now require a low alkalinity which lets only black rock-wool compete. We believe these facts will prove important to your firm. We urge you to write for our industrial catalog, and we will appreciate your hearing our representative when he calls.



BALDWIN-HILL Insulations

562 KLAGG AVE.
 NEW YORK

CHICAGO

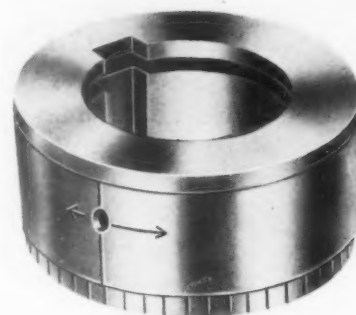
TRENTON, N. J.
 KALAMAZOO

When writing Baldwin-Hill Insulations please mention Purchasing

(Continued from page 102)

ously arranged conveyor belt equipped with swiveled carrier basket-pockets to automatically and continuously place the shells in position for forcing solvent into the shell interiors under pressure. Degreasers for handling 20 to 75-mm. shells are portable and do not require water, steam or gas connections. Self-contained, heating of solvent and temperature control is by electricity. Stationary degreasers handle sizes up to 155-mm. Shells reach station at top of unit drained, dry and clean.

ADJUSTABLE SPACING COLLAR



■ To meet war-time milling machine production demands, new heavy-duty adjustable spacing collar for milling machine cutting arbors, with hardened and ground backing plate is offered by the Dayton Rogers Manufacturing Co., Minneapolis, Minn. Collar has an engraved indicator showing which way to make the necessary adjustment which can be had by half thousandths. Maximum overall adjustment is $\frac{1}{8}$ inch. Collar comes in six sizes.

ARMY-NAVY "E" PINS



■ Finely executed Army-Navy "E" Pins for industrial workers, designed and finished to serve as a permanent memento, has been introduced by the Royal Emblem Company, New York. The pins, which come in two sizes, $1\frac{1}{4}$ " and $\frac{3}{4}$ ", are said to be featured by excellent detail in the metal wreath and centerpiece, and the cloisonne colors are hand-fired and polished to a brilliant finish. The enameled and wreath sections are produced separately, and after assembly the pins are given a preservative coat that is said to impart a high degree of permanence to the finish.

WAX IMPREGNATED PAINTS

■ Line of wax impregnated paints styled "Wax Fortified Paints" is announced by S. C. Johnson & Son, Inc., Racine, Wis. They are claimed to impart a special

(Continued on page 106)

How to Save

50% IN CRITICAL MATERIALS

50% IN BALLAST COST

— and cut ballast electrical losses **46%**

Use the NEW G-E Forlamp ballast for fluorescent-lighting installations

THIS new 100-watt, 265-volt ballast—which operates four 100-watt fluorescent lamps—requires 48% less copper, 47% less iron and steel, and 50% less aluminum than two Tulamp ballasts of the same rating—previously the most economical hookup available.

BALLAST COST IS CUT IN HALF

One Forlamp 100-watt ballast does the work of two Tulamp 100-watt ballasts, yet costs the same as *one* Tulamp ballast.

SAVING IN POWER

Electrical losses of the Forlamp ballast are 46% less than the losses of two Tulamp ballasts of the same rating. You can operate four 100-watt lamps at rated lumens of light output with 8% less power consumption.

In one large bomber-plant installation this has meant the release of 396 kilowatts of power for other uses.

COPPER SAVINGS, TOO

The new Forlamp ballast operates within a voltage range of 250 to 280 volts on power sup-

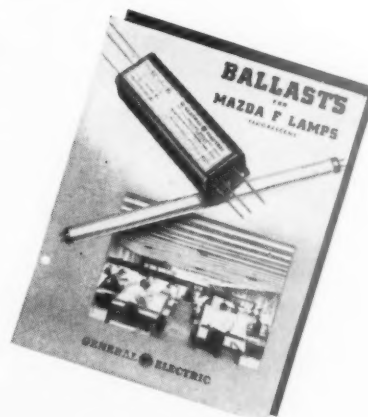
plied by 265/460Y-volt circuits. On these circuits only one-fourth to one-third as much copper is required to carry a given amount of power as is required to carry the same amount of power at 115 volts.

Most new war plants—particularly those with load-center distribution systems—have circuits carrying power at the necessary voltages for the operation of the Forlamp ballast. Plants converting to war production can often provide these voltages on their lighting circuits.

BULLETIN GEA-3293D contains information on the complete line of G-E ballasts for all MAZDA F lamps from 4 to 100 watts. General Electric Co., Schenectady, N. Y.



The Navy "E", for Excellence, has been awarded to 92,780 General Electric employees in six plants manufacturing naval equipment



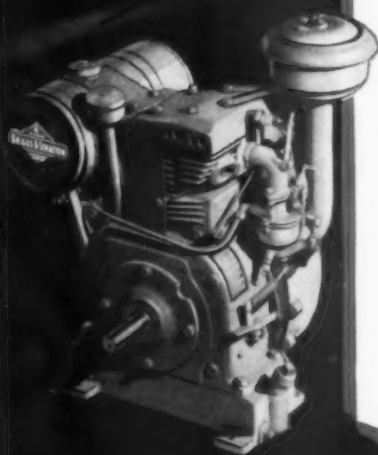
GENERAL ELECTRIC

408-10-5205

When writing General Electric Company please mention Purchasing

"Reel" action at "X"

"Movies" are up front, too, for periods of relaxation. Keeping these "Reels" rolling, is one of our assignments — for the projectors are operated with lighting equipment powered by Briggs & Stratton gasoline motors. This is but one of scores of "special" applications, in addition to many major ways by which Briggs & Stratton motors are serving our armed forces.



OWNERS of 4 cycle air-cooled Briggs & Stratton motors are fortunate. They are not only assured of dependable power during the present emergency, but they know that these sturdy gasoline motors embody built-in features and quality that insure constant delivery of capacity power year after year. Now, when all equipment is being operated "around the clock", it is most important to keep your Briggs & Stratton motor in tip-top condition. It will pay in extra performance and even longer life.

A book containing Operating Instructions, Adjustment and Repair Information is available on request. When writing, be sure to mention the model letter of your motor.

BRIGGS & STRATTON CORP.
MILWAUKEE, WIS., U. S. A.

FOR VICTORY
Buy U. S. War Bonds



When writing Briggs & Stratton Corp. please mention Purchasing

(Continued from page 104)

surface smoothness, to have maximum light values, and to provide unusual resistance to dirt and wear. Their high resistance to usual wall wear is said to make for long life and easy maintenance. Available in mill white, flat or gloss; interior flat and gloss and semi-gloss; dado enamel, and machine enamel. Come in 1, 5 and 55 gallon containers.

FAST MEDIUM SIZE MILLING MACHINE

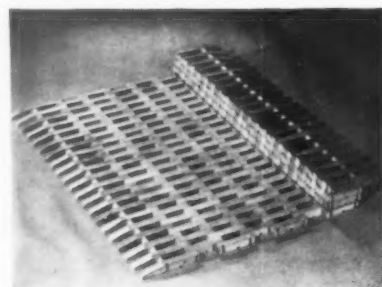


■ Universal type miller for either horizontal or vertical work, claimed to answer every question of speed, versatility, precision, and ease of operation, is announced by the Lombard-Governor Corp., Ashland, Mass. Machine has wide range of feeds and speeds, and operation is featured by ease of job set-up and control, and quickness of change-over. Large dimensional capacity is provided by 28" horizontal power feed, 10" cross power feed, and 4" vertical feed, and 12 x 53 work-holding surface. Vertical quill is 4 1/2" in diameter, 14" long, and has 4" of power or hand feed as well as 360° of angular adjustment.

GUMMING FOR METALS

■ Gumming that sticks to metal surfaces has been developed by the Ever Ready Label Corp., New York, for applying instruction, inspection, warning and other kinds of labels to metal products. It can be applied to either paper or linen fabric upon which text may be printed or written.

WOOD-LINK FLOOR MATTING



■ Light weight, wood link industrial floor matting, has been developed by the American Mat Corporation, Toledo. Known as Flexible Wood Link Matting,

(Continued on page 108)

Seconds saved here... Can mean days saved here



Thousands of times on each production run these milling machine fixture nuts are loosened and retightened. Saving only one second per nut thru use of Snap-on Speed tools means hours saved on every job!

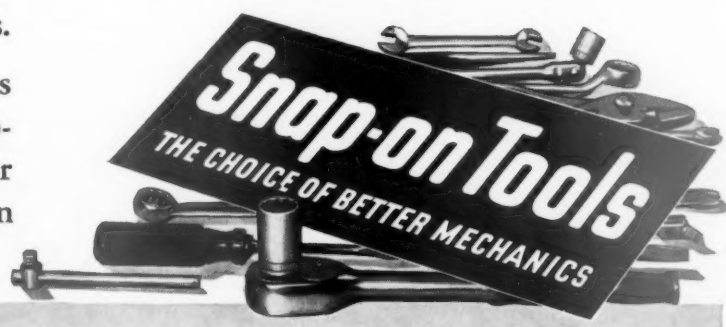
Get Faster Production with Snap-on Tools

With precision hand tools such as Snap-ons, your operators can turn out *more* work . . . faster and easier. That's because Snap-ons are scientifically designed for leverage, shaped and balanced for sureness-of-hand and swiftness in handling, they're accurate to the thousandth, built of fine steels for enduring serviceability under the most exacting production conditions.

A wide range of industrial requirements are covered by the 3,000 tools in the Snap-on line . . . and prompt attention to your requirements is assured by an organization

of 35 factory branches, staffed with experienced tool men who are glad to bring tools direct to your office or plant to "see and try before you buy". Catalog and complete information on request. Write . . .

SNAP-ON TOOLS CORPORATION
8048-B 28th AVENUE KENOSHA, WISCONSIN



When writing Snap-On Tools Corporation please mention Purchasing



Engineering helps to win wars!

Successful military campaigns can be planned only with the assistance of military engineers. And only industrial engineers can successfully design industrial truck casters that stand up to the pace of modern war production.

Engineered to Fit Today's Production!



BOND 36-A CASTER. Basically different in design, this caster combines easy swiveling with long service. The "reason why" lies in the arrangement of its ball races and its use of durable Bond Caster metal. Pressure lubricated throughout.

BOND was the first to engineer industrial casters to fit the job. Every Bond Truck Caster is designed and built for the conditions it meets in actual operation. That's why Bond Casters speed materials handling... help you speed war production.

BOND FOUNDRY & MACHINE COMPANY, MANHEIM, PA.



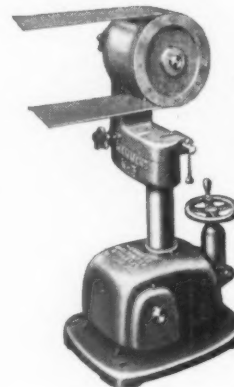
* Reg. U. S. Pat. Off.

When writing Bond Foundry & Machine Company please mention Purchasing

(Continued from page 106)

it follows contour of floor and can be rolled or folded up for easy handling and cleaning. Mat comes in natural wood color, one inch thick in stock sizes: 18" x 32", 24" x 38", and 30" x 44". Can be obtained in special sizes of any length up to 36" in width. Ends are beveled. Grueling factory tests are said to have demonstrated ability of matting to withstand abuse way beyond that encountered in common usage.

ABRASIVE BELT BACKSTAND IDLER



■ Belt backstand idler for use in conjunction with abrasive belts, known as Hammond No. 3 is announced by the Hammond Machinery Builders, Inc., Kalamazoo, Mich. It is claimed that use of this machine in conjunction with abrasive belts running over contact wheels employed on existing grinding and polishing equipment, converts them into high-production, cost-cutting machines. Spring loaded adjusting screw and hand wheel simplifies maintenance of tension or releasing tension for making changes.

SELF-CONTAINED DUST COLLECTOR

■ Cyclone-filter type, self-contained dust collector having 1250 cfm capacity, is new addition to the line of dust collectors made by the Agat-Detroit Mfg. Co., Detroit, Mich. Unit can be moved with equipment to which it is attached. Installation involves neither sheet metal work, nor tools. After removal of dust and dirt air is given final cleaning by spun glass filter and returned to working space, thus saving heat. Floor space required for unit is 20 x 28 inches.

ALUMINUM-LIKE PAINTS

■ Suggested as alternates for aluminum paint, two new finishes manufactured by the Rust-Oleum Paint Cor., Evanston, Ill., are said to closely simulate aluminum and to give maximum results. The Silver Gray brand was developed for outdoor and some indoor uses on metal, concrete, brick and wood. It gives a high gloss finish, and is claimed to give unusual protection against rust and minor fume conditions. The other type, Fume-Proof, was developed for use in heavy

(Continued on page 110)



ON THE CHECKER BOARD OF WAR no single item is more vital to mass production of war machinery, tanks, trucks, ships, guns, planes, etc., than the humble bolt, nut and cap screw.

These are the "kings" on the war checker board.

With superiority in mechanized equipment, our fighting men can move and

strike faster and better, and with greater assurance of victory.

Production of Wasmer Tru-Fit Bolts, Nuts, Cap and Set Screws, Lag Bolts and Lock washers is dedicated 100% to the war effort.

WASMER

BOLT & SCREW CORP.

13600 ATHENS AVENUE, CLEVELAND, OHIO, U. S. A.

When writing Wasmer Bolt & Screw Corp. please mention Purchasing

To Make the Most of
the **LAMPS** You Have ...

Get the
**CHAMPION
MAINTENANCE
MANUAL**



It's chock full of practical, usable helps and suggestions that will keep the electric lamps and lighting you now have at the peak of effectiveness. While they last, this handy Manual is yours for the asking. Write for Champion Manual H, giving your name, company and position.

To Make the Most of
the **LIGHTING** You Have ...

Get
**CHAMPION
LAMP
REPLACEMENTS**



Champion Fluorescent and Incandescent Lamps are backed by forty-three years of specialization. They have an unsurpassed reputation for quality, dependability and economy. The Champion distributor in your vicinity is capable of filling your lamp needs at lowest cost. Prompt lamp replacement is a major factor in the maintenance of peak production efficiency.

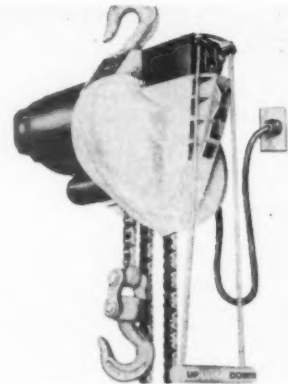
CHAMPION LAMP WORKS
Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.

(Continued from page 108)

industrial districts where smoke, brine, dampness or fume conditions are severe. Paints are said to withstand temperatures up to 450°F. highly resistant to weather conditions, and to provide an aluminum-like appearance.

PORTABLE ELECTRIC HOIST



■ Midget King is the name of a hoist that was developed by Yale & Towne Mfg. Co., Philadelphia Division, for time saving and increased production. Comes in $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ and 1 ton capacities (tested to 50% overload), and is made in A.C. and D.C. models. Requirements for operation are a place to hang and an outlet to plug into. Operating cost is placed at two cents per day. Sturdy and durable, yet light enough to make for easy portability.

SAVES TIME GRINDING MILLING CUTTERS

■ Kutrite is the name of a milling cutter grinding fixture devised by the Acro Tool & Die Works, Chicago, that is said to accurately position milling cutters, circular saws, gear cutters and other cutters on the surface grinder, simplifying otherwise high-skill grinding operations. Manufacturer claims that any shopman can accurately grind both the ends and sides of cutting edges in minutes. Unit is said to be practically fool-proof, and to be an assurance of uniformity.

GRAPHITE LUBRICANT FOR DEAD CENTERS OF LATHES

■ Graphite lubricant for dead centers of lathes, developed by the Joseph Dixon Crucible Co., Jersey City, N. J., is said to effectively control overheating and protect dead centers against scoring and softening, thus reducing wear of the center and also reducing work spoilage. Product has many other uses as an anti-seize compound where a lubricant of extreme film strength is required. It comes in 1, 4, and 8 ounce collapsible tubes.

BOX CAR DOOR OPENER

■ Ipco Car Door opener is the name of a fifteen-pound powerful tool for opening box car doors, introduced by the Industrial Products Co., Philadelphia, Pa. The unit is said to be safe and easy to handle, and requires but one man to open or close any box car door in a few seconds.

When writing Champion Lamp Works please mention Purchasing

PRODUCTION RULES FOR EFFICIENCY

For More and Better Grinding

IN FOUNDRIES AND STEEL MILLS

WHEEL SPEEDS:



- 1—For Resinoid Bonded Wheels—constant wheel speed of 9,500 surface feet per minute will maintain most economical wheel cost.
- 2—For Vitriified Bonded Wheels—constant wheel speed of 6,500 surface feet per minute will maintain most economical wheel cost.
- 3—Constant surface speed should be maintained as the Grinding Wheel decreases in diameter through use. The speed of the spindle should be increased correspondingly as the wheel diameter decreases. This can be accomplished by means of a variable speed countershaft or cone pulley on the grinder or by transferring from a larger grinder to a smaller one with higher spindle speed.

GRINDING PRESSURE:

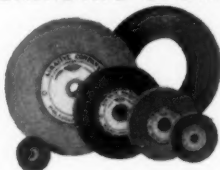


- 1—Increased economy may be obtained by increasing the pressure (or direct load) at the point of grinding contact to the extent where lowest total grinding cost is obtained. The best pressure to use can be determined by test.
- 2—Too much grinding pressure will break down the wheel and increase grinding cost per pound of metal removed. Select the proper grade of wheel so that too much pressure need not be applied to obtain maximum cutting rate in relation to wheel wear.

GRINDING MACHINE:

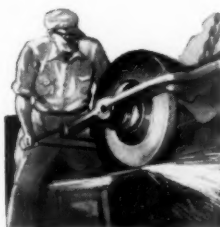
- 1—The grinding machine, whether floor stand or swing frame, should be as free from vibration as possible. Vibration tends to break down the wheel and causes excessive wheel wear. Spindles should be rigid and run true and free, bearings should be in excellent condition and wheel mounts true and up to size.

GRINDING OPERATOR:



- 1—The workman's knowledge of the tool he is using, and its limitations, is the most important factor in obtaining most efficient use. This is particularly true of Grinding Wheels.
- 2—Use a Grinding Wheel with care; do not "abuse" it by "edging" it, or by bumping the work, or by applying too much pressure.
- 3—Proper use of the wheel will produce the same number of pieces per hour and will give longer wheel life.

GRINDING WHEEL SELECTION:



- 1—Use the grain and grade combination that will give best results. In general, use coarse grain sizes (12, 14, 16, 20, etc.) and hard grades (P, Q, R, S, etc.).
- 2—On high speed grinders use Resinoid Bonded Wheels at 9,500 surface feet per minute. On low speed grinders use Vitriified Bonded Wheels at 6,500 surface feet per minute.
- 3—For grinding steel castings, billets, forgings and annealed malleables use **Borolon** (Aluminum Oxide) WHEELS.
- 4—For grinding gray iron castings, unannealed malleables, brass, bronze and aluminum use **Electrolon** (Silicon Carbide) WHEELS.

Close attention to the above details will mean more production from your grinding operations—and more GUNS, TANKS, TRUCKS, SHIPS and PLANES TO "SPEED VICTORY"!



ABRASIVE COMPANY

DIVISION OF SIMONDS SAW AND STEEL CO.

TACONY & FRALEY STS., PHILADELPHIA, PA. • CHICAGO BRANCH: 127 SOUTH GREEN ST.

DISTRIBUTORS IN ALL PRINCIPAL CITIES

When writing Abrasive Company please mention Purchasing

Among the ASSOCIATIONS

PRESIDENT HABERKERN ADDRESSES NEW YORK ASSOCIATION

In an atmosphere that savored of a national convention, the Purchasing Agents Association of New York held its "National Night" meeting at the Builders' Exchange Club, January 19th, where an attendance of 175 gave rapt attention to a stirring address by President Roy C. Haberkern of the National Association (Pur. Agt., R. J. Reynolds Tobacco Co., Winston-Salem, N. C.), and short talks by Joseph I. Kitchin, vice president, Eighth District, National Association, (Pur. Agt., Lanston Monotype Machine Co., Philadelphia), and Secretary-Treasurer George A. Renard of the National Association.

Executive Secretary J. H. Leonard of the local body announced that 25 new memberships had been approved, during November, December and January, bringing the membership of the New York Association to 447 and apparently making it the largest of the local groups affiliated with the National Association.

President W. E. Cummin formally opened the meeting, and after a few informal remarks during the course of which he urged that Purchasing Agents thoroughly familiarize themselves with the details of procedure under CMP as "they will sleep with it for many months to come", he turned the meeting over to National Director Thomas I. Savage as master of ceremonies. Secretary Renard of the National Association declared that "most of the problems confronting business are centered in the Purchasing Department", and that the company that follows sound purchasing principles in 1943 and applies them courageously will not need to fear future developments as much as those who just muddle along. He complimented Editor Stuart F. Heinritz of Purchasing magazine for "doing a grand job on Government red tape", declaring that he happened to know that it has had a wonderful effect in Washington.

President Roy C. Haberkern of the National Association was the principal speaker. He presented a forceful analysis of the national economy under the stress of war conditions, the conversion of industry to war production, and heavy taxation, and post-war conditions, in the course of which he reviewed the "miracles" that had taken place in American industry which he had been privileged to inspect on his visits to local Purchasing Agent associations throughout the country.

Emphasizing the important role of the Purchasing Agent in the war effort, he declared that the Purchasing Agent who can best distinguish between fundamental and superficial developments will be of the

greatest value to his company now and in the post-war period. He stated that unquestionably there would be a period of business revival after the reconstruction period, and based on the history of the period following the Civil War and the First World War, this should approximate a year and a half, and this would be followed by a general recovery period of from three to five years.

"Regarding our profession," he continued, "we have made remarkable progress. During the past six months I have talked with many Purchasing Agents and I have been impressed by the magnitude of their responsibilities and the vital part the Purchasing Agent is taking in the winning of the war. Today he is the hub of the wheel around which his company revolves. The Purchasing Agents are the custodians of our material supplies and upon them rests the responsibility to see that material is not wasted, and that the utmost intelligence is exercised in finding substitutes."

Mr. Haberkern urged that Purchasing Agents take the utmost pride in their profession.

At a forum meeting preceding the National Night dinner session, with Henry Meyer, Purchasing Agent, General Bronze Company, as presiding officer, the members of the association discussed the fuel oil situation. They were told by Mark Anton, acting chief of the fuel oil division of the Petroleum Administration for War, Eastern area, that American industry may be obliged to stop burning oil for heat and power, not only for the duration of the war, but as a permanent policy. Thinking in government offices he said, deals with eventually restricting oil to the uses for which it is best fitted, namely, for automobile and airplane power, and using coal for other purposes. Known coal reserves, he explained, are 500 times greater than oil reserves. He declared that there would be no appreciable improvement in the oil situation until the war is over.

WASHINGTON GROUP NOW MEMBER OF NATIONAL ASSN.

"Your application was approved unanimously and the Washington Association is now affiliated with the National Association of Purchasing Agents." Such was the message that Joseph I. Kitchin, Vice President, District No. 8, of the National Association, conveyed to members of the Washington Association of Purchasing Agents, at the regular monthly meeting of that group held in the University Club January 12. Mr. Kitchin stated, among other things, that the roster of the National Association now totalled 6935 mem-

bers, 20% of which are in District No. 8.

The Washington Association, which held its organization meeting last October, now has a total membership of 24, two of whom were admitted at the January 12 meeting. These were C. Irving Hanson, Assistant Director and Chief of Commodity Advisory Group, Procurement Policy Division, War Production Board, and Robert L. Broun, Assistant Purchasing Agent, Briggs Clarifier Company. President E. P. Scully (Engineering & Research Corp., Riverdale, Md.) states that the association has a potential membership of 40, but that it is the policy of the group to build slowly but soundly. Roland M. Brennan, Purchasing Officer for the District of Columbia, is chairman of the membership Committee.

The Washington Association is unique from the standpoint of the purchasing power represented by its membership, which apparently is greater than that of any other association group in the world. In its membership are procurement officers of municipal, industrial, utility and institutional organizations, and two affiliated with the United States Government. One of these is Clifton E. Mack, Director of Procurement, U. S. Treasury, who directs negotiation of contracts for supplies and services for the general requirements of the U. S. Government, and is also identified with Lend-Lease procurement, the other being C. Irving Hanson, mentioned in the foregoing.

1 1 1

"EUROPE AS IT IS" TOLD TO LOS ANGELES GROUP

Boyd Comstock, European Commentator and well known athlete, helped the Purchasing Agents' Association of Los Angeles, to inaugurate its 1943 business activities, with a forceful talk on "Europe As It Really Is," at its monthly dinner meeting held in the Elks Club. Company executives were invited to attend the meeting, and special chamber music was provided. At the afternoon meeting the group discussed priorities and CMP.

1 1 1

VARIETY FEATURES MEETINGS OF CALIFORNIA GROUPS

"Trees and Homes", a sound motion picture, was presented at the January 5 meeting of the Purchasing Agents Association of Northern California, by the Weyerhaeuser Timber Company; and D. V. Daniels, retired Naval Lieutenant, gave an interesting portrayal of the operations and mechanics of a submarine, at the January 14 meeting. The association's January 7 and January 12 sessions were

(Continued on page 114)

Man's most useful tool

FOR BUILDING --- WAR OR PEACE!

THESE BRANDS MEAN
GUARANTEED QUALITY

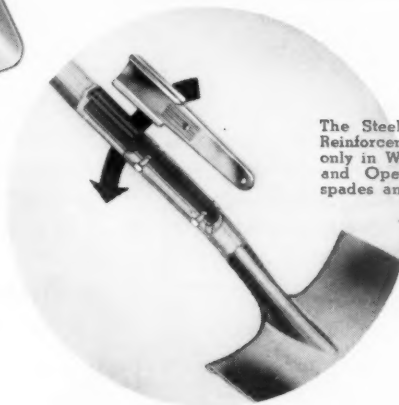


FIRST IN WAR! Shovels, spades and scoops are infinitely important tools in the construction of transportation lines, camps and fortifications . . . standard equipment for soldiers, trucks, tanks and armored cars.

FIRST IN PEACE! Shovels, spades and scoops —basic hand-tools of mining and agriculture ... needed for taking all raw materials from the ground ... necessary in the building of roads, railroads and plants, and in all excavation jobs.

Shovels, spades and scoops come first wherever the earth is turned. As designed and manufactured by Wood, these primary tools for all labor do work better and more easily and last longer.

**THIS EXCLUSIVE FEATURE IN THE HANDLE
MEANS EXTRA-STRENGTH IN THE TOOL**



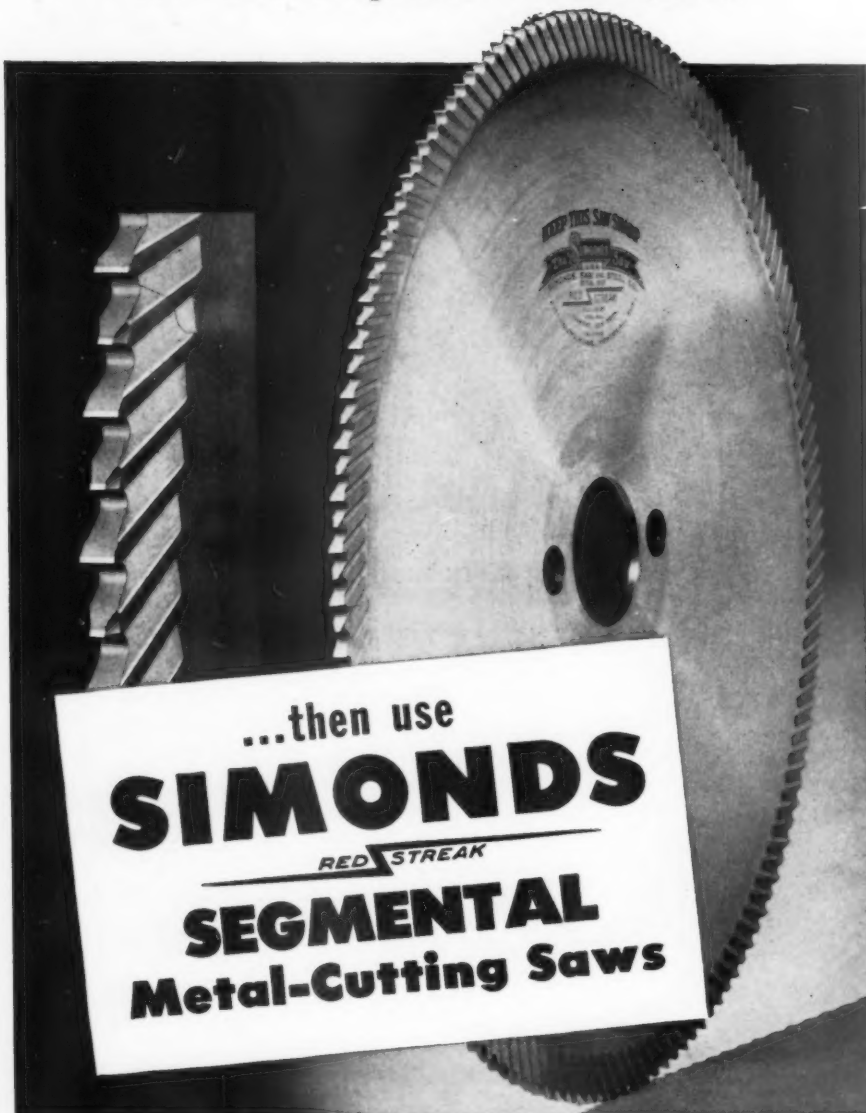
The Steel I-Beam Handle Reinforcement . . . found only in Wood Closed Back and Open Back shovels, spades and scoops.

THE WOOD SHOVEL AND TOOL COMPANY
PIQUA, OHIO

A NATIONAL ORGANIZATION SPECIALIZING EXCLUSIVELY IN SHOVELS, SPADES AND SCOOPS

When writing The Wood Shovel and Tool Company please mention Purchasing

Need a fine pitch or a super-smooth cut on "extra-special" war work?



These fine-toothed saws cut straight and true under highest pressure, with no vibration or chatter. Interchangeable cutting segments are tongued and riveted into grooves on the saw plate... which is specially toughened against overloading. Teeth follow the full, round-gullet form used on Simonds Inserted Tooth Saws. Prompt shipments on rated orders for all diameters from 11" to 59"

Send for Free Folder

Tells how to order Simonds Segmental Saws... gives full engineering data. Write for a copy.

SIMONDS SAW AND STEEL CO.

1350 Columbia Rd., Boston
127 S. Green St., Chicago
228 First St., San Francisco
311 S. W. 1st Avenue, Portland, Ore.
520 First Avenue, So., Seattle

SIMONDS

Famous Family
of Metal-Cutting Tools

★ BOUGHT YOUR BONDS THIS WEEK? ★

When writing Simonds Saw & Steel Co. please mention Purchasing

(Continued from page 112)

Forum meetings for members, the former being on the subject of "Containers". William C. Haack, chairman of the forum committee, presided. The East Bay Group meeting of January 21, dedicated to executives, was featured by a talk by Newton H. Bell, world traveler and lecturer, on "Africa—The Springboard for Invasion". "Target for Tonight", a sound motion picture released by the Office of War Information, showing the R. A. F. in actual aerial warfare over France and Germany, was presented at the January 28 meeting.

1 1 1

J. H. WOLF HEADS TULSA ASSOCIATION

J. H. Wolf, Purchasing Agent, British-American Oil Production Co., was inducted into office as president of the Purchasing Agents Association of Tulsa, at the January 12 meeting of that body. Other officers who took over their duties at this meeting were R. M. McMahan, Boviard Supply Company, first vice president; W. H. Bradley, Darby Petroleum Corporation, second vice president; R. V. Stephens, Public Service Company of Oklahoma, secretary-treasurer. H. M. Cosgrove continues as executive secretary and E. R. Welch as assistant secretary.

Following the induction of officers, P. E. Fitzgerald, geologist, Dow Chemical Co., Dowell, Ill., gave a talk on the "History and Development of Plastics." He exhibited samples of the plastics materials, and with the aid of slides explained their application. At the January 26 meeting of the Association, C. P. Parsons of the Halliburton Oil Well Cementing Company, showed a color and sound moving picture entitled "Controlling Nature's Fury," followed by talk on "What does the Bottom of a Well Look Like."

1 1 1

AIR TRANSPORT HOLDS ATTENTION OF BIRMINGHAM PURCHASING AGENT

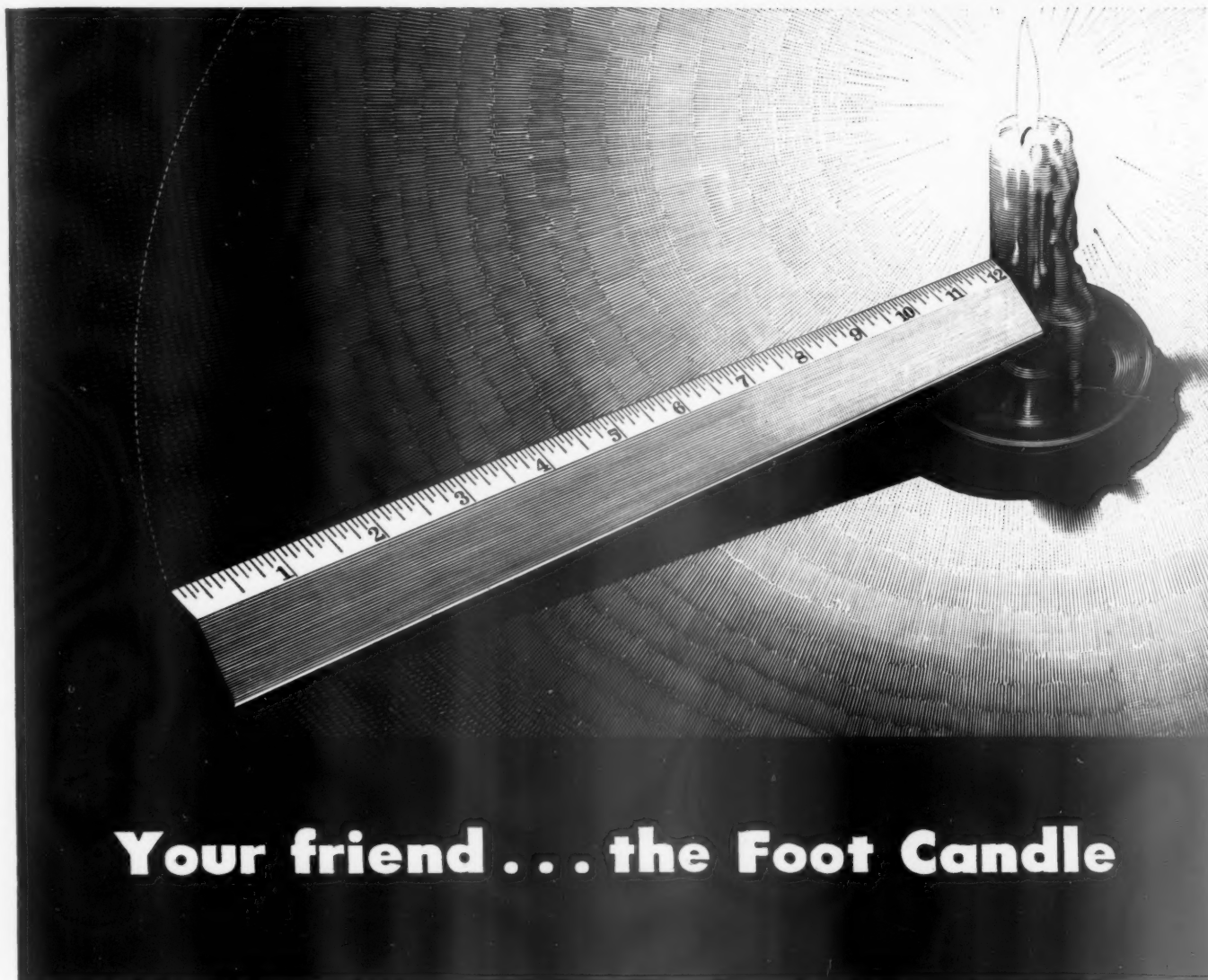
Members of the Purchasing Agents Association of Birmingham, in a program arranged by Fred Carlisle, First National Bank, were much interested in a talk by John W. Merriman, Director of Public Relations, Bechtel-McCone-Parsons Corporation on the relation of his company's new airplane modification plant to the industrial life of Birmingham and its importance to the war effort.

1 1 1

CMP DISCUSSION HOLDS INTEREST OF SPRINGFIELD BODY

The Springfield, Ohio, Branch of the National Association of Purchasing Agents met at the Shawnee Hotel in that city January 13. The meeting was called to order by President Eugene Saum who asked the members and guests to stand for a moment in silent tribute to a fellow member, Eli A. Jensen, Vice President of the National Association, who died suddenly at St. Louis the previous evening. Host for this meeting was the Oliver Farm Equipment Company, whose Purchasing Agent, G. M. Resor, is a member

(Continued on page 116)



Your friend . . . the Foot Candle

A foot candle is the illumination from one standard candle on a surface one foot from the light source.

It is the unit of measurement of illumination.

But more than this, the foot candle is man's staunch friend.

In adequate amounts it means his family will have sufficient light in the home . . . he and his fellow workers sufficient light for better, safer factory production or efficient office detail.

For almost 100 years the MILLER organization has known the foot candle on working terms. This lighting experience bridges the broad ground from the whale oil lamp to the modern continuous fluorescent lighting system now helping industry speed out planes and tanks and cannon.

It has involved engineering and design and skill with copper . . . glass . . . steel . . . aluminum and many new non-metallic materials. It has required ingenuity and resourcefulness and pioneering.

It qualifies us to work with those who need better lighting in war industry. It enables us to cooperate intelligently with those who promote better lighting and sell and service it, too. It means that the MILLER engineer (located in principal cities) can serve you in one of several ways, for better lighting today and tomorrow.

Miller Lighting

... for better, safer production
... for a more prosperous peace

THE MILLER COMPANY • MERIDEN, CONN.

Today our men and women are also busy making gauges, bomb noses, torpedo and searchlight parts, wiring devices, ship fixtures and many other precision parts for Army & Navy.

When writing The Miller Company please mention Purchasing


AIRCRAFT TUBING MAKER SOLVES TOUGH GRINDING PROBLEM

USES "SILVER STREAK" ABRASIVE BELTS TO REMOVE HARD SCALE FROM ALUMINUM ALLOYS

Gets Consistently Excellent Results Over 18-Month Period

Consistently excellent results . . . over an 18-month period . . . under the toughest sort of production conditions — no wonder this manufacturer of tubing for aircraft hydraulic and conduit lines is completely sold on "Silver Streak" abrasive belts. AP's exclusive insulating treatment makes "Silver Streak" processed belts tougher and longer-lasting . . . keeps them cool, sharp, uniform-cutting even when grinding temperatures go up to 1700° — heat that "burns the heart" out of ordinary abrasives.

Chances are you've got tough grinding problems, too. If so, why don't you try to solve them once and for all with AP coated abrasives? Remember — there are AP abrasive cloths, belts, discs, for every type of grinding and finishing. And we're always glad to send generous FREE samples. So write today . . . tell us the grinding problems you're up against. Abrasive Products, Inc., 523 Pearl Street, South Braintree, Massachusetts.



ABRASIVE PRODUCTS

SOUTH BRAINTREE MASSACHUSETTS
JEWELOX • JEWEL EMERY • JEWEL GARNET INC. JEWELITE • JEWEL FLINT • NEW PROCESS

When writing Abrasive Products, Inc. please mention Purchasing

(Continued from page 114)

of the local association. Principal subject on the agenda for the evening was the Controlled Materials Plan which was explained by a WPB representative from Dayton. After the meeting was officially concluded, the members joined in a round table commodity discussion.

MANPOWER DISCUSSED AT COLUMBUS

The Columbus Association of Purchasing Agents held its regular monthly meeting at the Seneca Hotel, January 11. Feature of the evening was an address by Wayne Hammond of the District Manpower Commission on the subject "Manpower".

CINCINNATI ASSOCIATION HEARS TALK ON STEEL SITUATION

George S. Rose, secretary of the American Iron and Steel Institute addressed the January meeting of the Cincinnati Association of Purchasing Agents, on the steel situation.

H. D. FITZ HEADS TWIN CITY ASSOCIATION

H. D. Fitz, Fairmont Railway Motors Co., Fairmont, Minn., was elected president of the Twin City Association of Purchasing Agents for the ensuing year, at the association's annual meeting on January 13. C. A. Awsumb, St. Paul Union Stockyards Co., St. Paul, was elected Vice President; Basil L. Nelson, Northern States Power Co., St. Paul, Vice President; and H. E. Hildebrandt of the Nutting Truck Company, Faribault, Minn., was elected director for a four-year period.

COL. COOPER SPEAKER AT BRIDGEPORT MEETING

Tuesday, January 5 was Bridgeport Brass Night for the Salesmen's and Purchasing Agents' Association, Bridgeport, Conn., at meeting held in the Stratfield hotel. Harry M. Morrison, director of purchases, Bridgeport Brass Company, was general chairman of the meeting at which Col. Edwin H. Cooper, World War veteran, photographer, world traveler and speaker, presented his film and lecture on Chile.

PETROLEUM SUBJECT AT MEETING OF DAYTON ASSOCIATION

Members of the Dayton Association of Purchasing Agents Association, had the pleasure of listening to a fine talk on "Petroleum in War" at their January 14 meeting in the Engineers Club. J. G. Jordan, division manager of the Sheel Oil Co., Cleveland, was the speaker.

RUBBER IS THEME OF PITTSBURGH MEETING

Dr. Webster M. Jones, Director, College of Engineering, Carnegie Institute of Technology gave an intimate talk on "Rubber" at the January Meeting of the Purchasing Agents Association of Pittsburgh. Dr. Jones is a consultant to the office of Research and Development, War Production Board, and previous to asso-

(Continued on page 118)

BELTS *Must* BE KEPT GOING

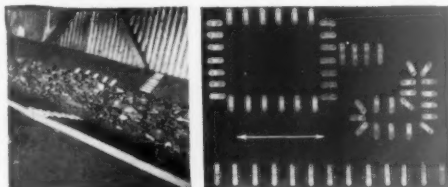
—and to help you keep the wheels turning in your plant you can safely rely on these belt fastening products

FLEXCO HD
TRADE MARKS REG. U. S. PAT. OFFICE

**BELT FASTENERS
AND RIP PLATES**

FOR CONVEYOR BELTS

Bulletin F-100 shows how to make "water-tight" butt joints in conveyor belts with Flexco HD belt fasteners. Also shows the various types of rips and patches that can be handled with these fasteners and with Flexco HD rip plates. Lists fasteners made of steel, "Monel," "Everdur" and "Promal." The use of these fasteners has increased tremendously and if you use conveyor belts from 1/4" to 1 1/2" thick you will want this bulletin.



• Flexco HD Belt Fasteners on a coal conveyor showing the natural troughing of the belt. At the right is a view showing the type of repairs that can be made with Flexco HD Belt Fasteners and Rip Plates.

ALLIGATOR
TRADE MARKS REG. U. S. PAT. OFFICE

STEEL BELT LACING

FOR TRANSMISSION BELTS

Bulletin A-50 shows how to handle the lacing of flat belts up to 3/8" thick. Also how to cut out a damaged or worn section and splice in a piece right at the machine without loss of time and without requiring any tool but a hammer and a cutter. Tells when to use Steel, Monel or Everdur lacing for different services and gives list prices on long lengths up to 96" in both steel and alloys. Every purchasing department and belt maintenance man should have a copy.



• Throughout the whole range of transmission belts from thin tapes to belts 3/8" thick any maintenance man can easily lace a belt with Alligator as shown here.

ALLIGATOR
TRADE MARKS REG. U. S. PAT. OFFICE

V-BELT FASTENERS

FOR V-BELTS

Bulletin No. V-200 shows how the new cross-woven fabric core V-Belts are fastened with Alligator V-Belt fasteners. With this belting and these fasteners it is now possible to apply V-Belts to a much wider range of service such as line shaft and machine drives where the endless type of V-Belt could not possibly be applied. This bulletin should be in the hands of every designer of machines where V-Belts are to be used.



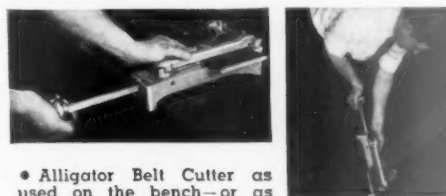
• Alligator "V"-Belt Fasteners as applied to a cross woven fabric core V-Belt on a machine tool. The view above shows a close-up of the fastener. This fastener is not to be used to repair broken or stretched out endless cord V-Belts.

ALLIGATOR
TRADE MARKS REG. U. S. PAT. OFFICE

BELT CUTTER

FOR BELT CUTTING

Bulletin BC-300 shows how the Alligator Belt Cutter speeds up belt fastening work. It cuts any belt (except metal stitched) up to 1/2" thick and 8" in width with one movement of the cutter.

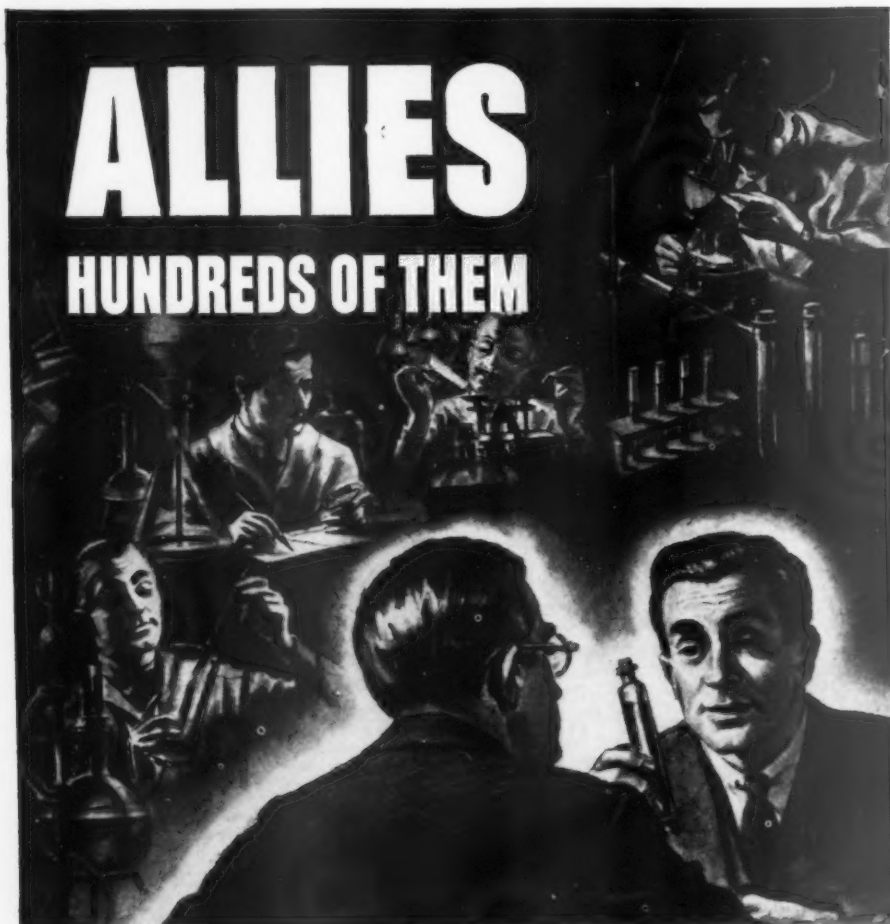


• Alligator Belt Cutter as used on the bench—or as up-ended on the floor.

Sold by supply houses everywhere

FLEXIBLE STEEL LACING CO., 4697 LEXINGTON STREET, CHICAGO, ILLINOIS

When writing Flexible Steel Lacing Co. please mention Purchasing



When you discuss industrial health with a WEST specialist

Because he brings with him the experience of hundreds of chemists, bacteriologists, industrial physicians, scientists, safety engineers and plant managers who have contributed to making West one of the greatest organizations of its kind in the world.

* LAN-O-KLEEN the Soap that Helps Keep Hands Healthy

Lan-O-Kleen has *proven* its value in helping prevent occupational skin diseases in many of the largest war plants from coast to coast. Lan-O-Kleen is not only an effective cleaner that works mildly and without harsh chemical action—but it actually leaves the hands feeling better, more fit for work. • Lan-O-Kleen is a powdered soap of *mildly* alkaline reaction compounded with granular corn-meal which has been impregnated (by an exclusive process) with LANOLIN, an oil almost identical to the natural oils secreted by the glands of the skin. Lanolin helps nature to maintain a normal, healthy skin condition. • Help prevent occupational skin diseases with their resulting lost time accidents and slower production. *Investigate* LAN-O-KLEEN.

*Trade Mark Reg. U. S. Pat. Off

55 BRANCHES • "PROMOTING HEALTH IN INDUSTRY" • COAST TO COAST

CLIP TO YOUR BUSINESS LETTERHEAD PLEASE

West Disinfecting Company, Dept. P, 42-16 West Street, Long Island City, N. Y.

Please send me a **SAMPLE QUANTITY** of Lan-O-Kleen with which I will give your claim a practical test. Please include folder explaining its use.

Name _____

Title _____

WEST

DISINFECTING
Company

42-16 WEST STREET • LONG ISLAND CITY • N. Y.

When writing West Disinfecting Company please mention Purchasing

(Continued from page 116)

ciating with the Carnegie Institute, was General Superintendent of the Processing Division of the B. F. Goodrich Company at Akron. He is a past president of the American Society of Chemical Engineers.

RENARD AT CHICAGO

The January meeting of the Chicago Purchasing Agents Association was held at the Sherman Hotel on the 14th. Speaker of the evening was George A. Renard, Executive Secretary of the N.A.P.A., who gave an up-to-the-minute interpretation of government and economic developments affecting purchasing, under the title "From One P. A. to Another."

SELF-INSPECTION BY NEW ORLEANS ASSOCIATION

The Purchasing Agents Association of New Orleans dedicated its first meeting of the new year to an introspection, using the theme "A frank appraisal of our Association, its purposes, policies, activities and management". Under the leadership of the chairman of the program committee, Fred E. Lind, the members took detailed inventory of their association in an open forum that was enlightening, entertaining and of a highly beneficial nature.

THE PA AND THE OPA INTRIGUES ROCHESTER

John W. Branch, attorney, Office of Price Administration gave members of the Purchasing Agents Association of Rochester, N. Y., a new version of their responsibilities as Purchasing Agents in a timely talk on "The PA and The OPA," at the Association's January meeting.

ERWIN ADDRESSES AKRON BUYERS

Spencer Erwin of the Cleveland *Plain Dealer* was the principal speaker at the January meeting of the Akron Purchasing Agents Association, held at the University Club on the 19th. Mr. Erwin's topic was "Foreign Affairs."

NATIONAL NIGHT AT ELMIRA

The Elmira Association of Purchasing Agents observed its annual "National Night" meeting at the Mark Twain Hotel, January 28th. Guests of honor were N.A.P.A. President, Roy Haberkern of Winston-Salem, N. C., Secretary George A. Renard of New York, and District Vice President Joseph I. Kitchin of Philadelphia, who presented a well rounded discussion of the Purchasing Agent's responsibilities and opportunities under present business and economic conditions, and ways in which the National Association program has been geared to assist in meeting these conditions.

CLEVELAND ASSOCIATION HAS PAST PRESIDENTS' NIGHT

Past presidents of the Cleveland Purchasing Agents Association were honored at the January meeting, held on the 21st at the Cleveland Hotel. Designated as

(Continued on page 121)

Victors on Every Fighting Front

Wherever American fighting machines face freedom's enemies—on land, sea and in the air—Timken Tapered Roller Bearings help to keep them rolling, flying, sailing, firing. Millions of Timken Bearings leave our factories every month to go into action in tanks, trucks, guns, airplanes and ships. It takes an enormous amount of material and a tremendous number of machine and man hours to produce all of the bearings required by the fighting forces, but we are pledged to see it through—and we will.

THE TIMKEN ROLLER BEARING
COMPANY, CANTON, OHIO

"All There Is In Bearings"



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

When writing The Timken Roller Bearing Company please mention Purchasing



Armstrong offers you more than 50 specialized sealing materials

FOR any gasket, packing or seal where the temperature does not exceed 300° F., Armstrong has the *right* material. That's because each of Armstrong's more than fifty specialized sealing materials has been developed to solve specific problems.

These materials are available in sheets, rolls, die-cut parts, molded and extruded shapes. There are cork compositions, synthetic rubbers, cork-and-synthetic-rubber compositions, cork-and-rubber compositions, fiber sheet packings, rag felt papers, and natural cork.

Each of these materials has the right combination of physical properties for a specific type of job. The table on the right outlines their wide range of characteristics. For more complete data, send for your copy of "Armstrong's Gaskets, Packings, and Seals." Write Armstrong Cork Company, Industrial Division, 7202 Arch St., Lancaster, Pa.

ARMSTRONG CORK COMPANY

INDUSTRIAL  DIVISION

ARMSTRONG'S SEALING MATERIALS CHECK LIST

A = Excellent B = Good C = Fair X = None

Physical Properties	Cork Compositions	Cork-and-Synthetic	Synthetic	Cork-and-Rubber	Fiber Sheet Packings	Rag Felt
Compressibility.....	A	A-C	X	A-C	B	A
Resilience.....	A	A-B	A	A	A	B
Tendency to Side-Flow...	X	C-X	A	A-X	X	A
Coefficient of Friction.....	A	A	B	A	C	C
Resistance to Set.....	A	B	A	B	A	C
Stability.....	A	A	A	A	A	A
Mechanical Strength.....	C	C	A	C	A	C
Flexibility at Low Temp...	C	A-C	A-C	B	B	A
Resistance to Sticking....	A	A	B	A	A	A
Imperviousness to Gas....	B	A-C	A	A	A	X
Imperviousness to Liquid..	A	A	A	A	A	C
Oil Resistance.....	A	A	A	X	A	X
Acid Resistance.....	C	A	A	A	C	X
Alkali Resistance.....	X	X	A	X	C	X
Sunlight Resistance.....	A	A	A	C	A	A
Corona Resistance.....	A	A	A	C	A	A
Gasoline and Solvent Resistance.....	A	A	A	X	A	X
*Range of Properties.....	A	A	A	A	C	C
For Temp. Up to 200° F...	A	A	A	A	A	A
For Temp. Up to 300° F...	C	B	A	B	B	C

*Extent to which physical characteristics can be varied during manufacture to meet different service needs.

Listed below are just a few of the more than 350 dependable products made in the 13 plants of the Armstrong Cork Company. **Natural Cork Products:** Balls, Closures, Floats, Polishing Wheels . . . and others; **Cork Composition Products:** Balls, Bulletin Board, Carboy Cushions, Expansion Joint, Friction Parts, Polishing Wheels, Ribbon . . . and others; **Mechanical Specialties:** Cork-and-Synthetic, Synthetic (without cork), Cork-and-Rubber; **Rag Felt Papers:** Flooring, Industrial, Roofing, Sheathing, Vibration-Damping; **Adhesives:** Cements, Emulsions, Pastes; **Transportation Floors:** Linoleum, Plain Automat, Ribbed Automat, Mastic Armoflor, Traffex.

When writing Armstrong Cork Company please mention Purchasing

(Continued from page 118)

"Past Presidents' Night," the presence of the men who have guided the Association through its years of growth and service high lighted an impressive record of progressive leadership. Special entertainment features were provided. Paul T. Skove, National Director and Past President, was in charge of the meeting.

1 1 1

"ARMY PROCUREMENT" AT SEATTLE

Col. W. H. Schaeffer, quartermaster supply officer, Seattle quartermaster depot, spoke on "Army Procurement" at the January 14 meeting of the Purchasing Agents' Association of Washington. Stanley F. Cowdell presented a summary on "Business and Commodity Prices and Outlook for 1943."

1 1 1

TALKS ON JAPAN AT RHODE ISLAND

Japan and the Japanese war party were the subjects of a talk by Harold W. Hackett, who spent 20 years in Japan, at the January meeting of the Rhode Island Purchasing Agents' Association. Another feature was a moving picture "Combat Report," issued by the United States Army Ordnance Department.

1 1 1

LEHIGH VALLEY ASSOCIATION HOLDS OPEN MEETING

The Lehigh Valley Purchasing Agents' Association held an open meeting at Easton, Pa., January 27th in the Elks Club. Members, company executives and others heard National Secretary George A. Renard analyze problems confronting buyers and present suggestions for handling them.

1 1 1

PROF. ANDRE SCHENKER ADDRESSES CONNECTICUT ASSN.

"Winning the War Through Peace," was the subject of an address at the January 26 meeting of the Purchasing Agents Association of Connecticut, Union League Club, New Haven, by Prof. Andre Schenker professor of Modern History, University of Connecticut, and foreign affairs commentator on station WTIC.

1 1 1

PREFERENCE PROCEDURE

Priorities Regulation 3, as amended December 26, for simplifying preference procedure, provides among other things (Part b.) (3) that purchase orders placed with one or more buyers shall not be duplicated in whole or in part in such manner that the amount of the material ordered exceeds the amount to which purchaser is authorized to apply or extend the rating even though he intends to cancel or reduce his purchase orders to the authorized amount prior to completion of delivery.

Any person authorized to apply or extend preference ratings may do so: (Part D) (1). On a written contract or purchase order, by endorsing on, or attaching to, each contract or purchase order placed by him to which rating order is applied or extended, a certification in substan-

(Continued on page 122)

Victory Metal

**FLYING FORTRESSES REQUIRE OVER
A TON AND A HALF OF COPPER!**

**HUSSEY COPPER
GOES WHERE
VITALLY NEEDED TODAY!**

There's no question in the minds of Americans today . . . we need flying fortresses built to out-perform anything our enemy can put in the air. And we're getting them!

Victory performance relies on the superiority and availability of our metals. HUSSEY COPPER, a proven Victory Metal, meets every rigid requirement where the highest quality copper is needed . . . with dependable uniformity and workability that helps to speed production.

HUSSEY **C. G. HUSSEY & COMPANY**
(DIVISION OF COPPER RANGE CO.)
Rolling Mills and General Offices • PITTSBURGH, PA.
Warehouses in Principal Cities

When writing C. G. Hussey & Company please mention Purchasing

NORTON ABRASIVES

A Very Simple Way to Increase Tool Life



"TWENTY-EIGHT TIMES as much work" from *expertly* finished cutting edges is the authorized report from one huge airplane concern recently featured in important trade magazines.

Authorities are now quite rightly stirred up to the immediate advantages of ★final hand "stoning" or "honing" of cutting tools. Large plants have put all sharpening under *engineering* supervision. Operators are supplied with properly sharpened cutters which have gone through three controlled processes—normal grinding, high surface finishing with a wheel as fine as 320 in some instances, *and then the final "stoning."*

Results: much faster, cooler, better cutting, amazingly extended tool life; greatly increased intervals between grinds.

Even if you do not have the facilities for this three-step program, do this; it's so simple: Give your tool room men and each of your machine operators an India Oilstone or, for the last word in honed edges, a Hard Arkansas. A mere touch-up at the first sign of dulling restores the edge without measurable loss of your high speed tool steel.

Benefit immediately from the standard practice of the largest tool users. Oilstone all tool edges. The cost can't even be computed, and the advantage is incalculable.



Do something about it today. Phone our nearest branch.

BRANCHES: Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, New York, Philadelphia, St. Louis, San Francisco, Tacoma.

BEHR-MANNING • TROY, N.Y.

(DIVISION OF NORTON COMPANY)

(Continued from page 121)

tially the following form signed manually or as provided in Priorities Regulation 7 (944.27) by an official duly authorized for such purchase:

"The undersigned purchaser hereby represents to the seller and to the War Production Board that he is entitled to apply or extend the preference ratings indicated opposite the items shown on this purchase order, and that such application or extension is in accordance with Priorities Regulation No. 3 as amended with the terms of which the undersigned is familiar."

(2) On a purchase order placed by telegraph, by including in the telegram, the following certification: "Ratings indicated are certified pursuant to Priorities Regulation No. 3." The requirements for manual signature or authorization under Priorities Regulation No. 7 (944.27) will be satisfied in such case if the copy of the outgoing telegram retained by the person placing the order is signed or authorized in the manner provided in that regulation.

(3) On a purchase order placed by telephone and requiring shipment within seven days, by stating to the supplier at the time of placing the order set forth in subparagraph 2 (above), provided that the person making the statement is an official duly authorized to make such certification, and within seven days furnishes the supplier written confirmation bearing a certificate of such preference rating. Preference ratings received by telephone are not to be extended by him until receipt of the written certificate, and in case of failure to receive the certificate within seven days "the supplier shall not accept any other order form, or deliver any additional material of any kind to, the purchaser until such written certification is furnished."



METALS PRICE BROADER

To provide for price adjustments necessary to prevent or relieve shortages and loss of essential production of specified metals, minerals, and metal and mineral products, or to keep low-priced producers in operation, OPA has broadened the scope of price adjustment provisions for a specified list of these commodities.

On application or by its own motion, OPA may make price adjustments on the basis of evidence showing either: (1) That a shortage exists or is threatened in the essential supply of a listed commodity, and that its producer is unable to maintain or expand production at his prevailing maximum prices; or, (2) That loss of a supplier's production for a listed commodity would force his customers to resort to higher priced sources of supply, and that the producer is unable to continue operations under his existing price ceilings.

The metals affected are those on WPB's Group 1, Substitute and Supply List (Materials Vital to the War Effort). They include aluminum oxide, asbestos fibers, celestite, corundum ore, corundum grain, cryolite, graphite, iridium, kyanite, quartz

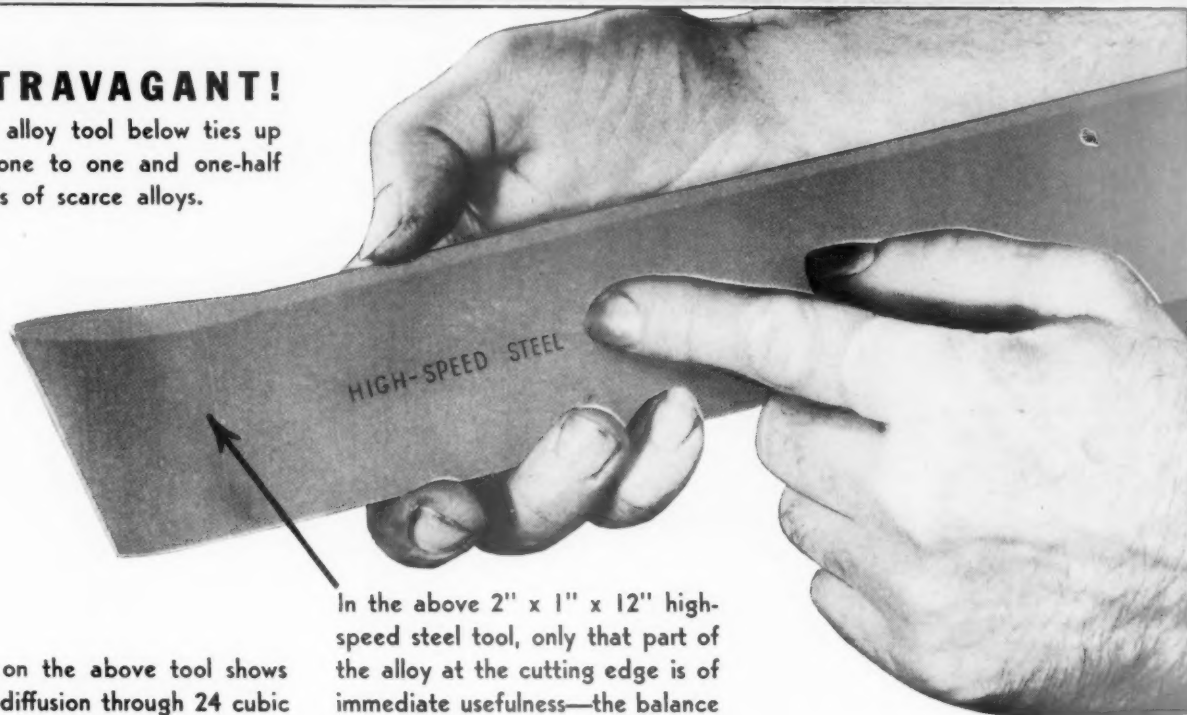
(Continued on page 124)

When writing Behr-Manning please mention Purchasing

FIRTHITE POINTS THE WAY TO SAVE ALLOYS

EXTRAVAGANT!

Solid, alloy tool below ties up from one to one and one-half pounds of scarce alloys.

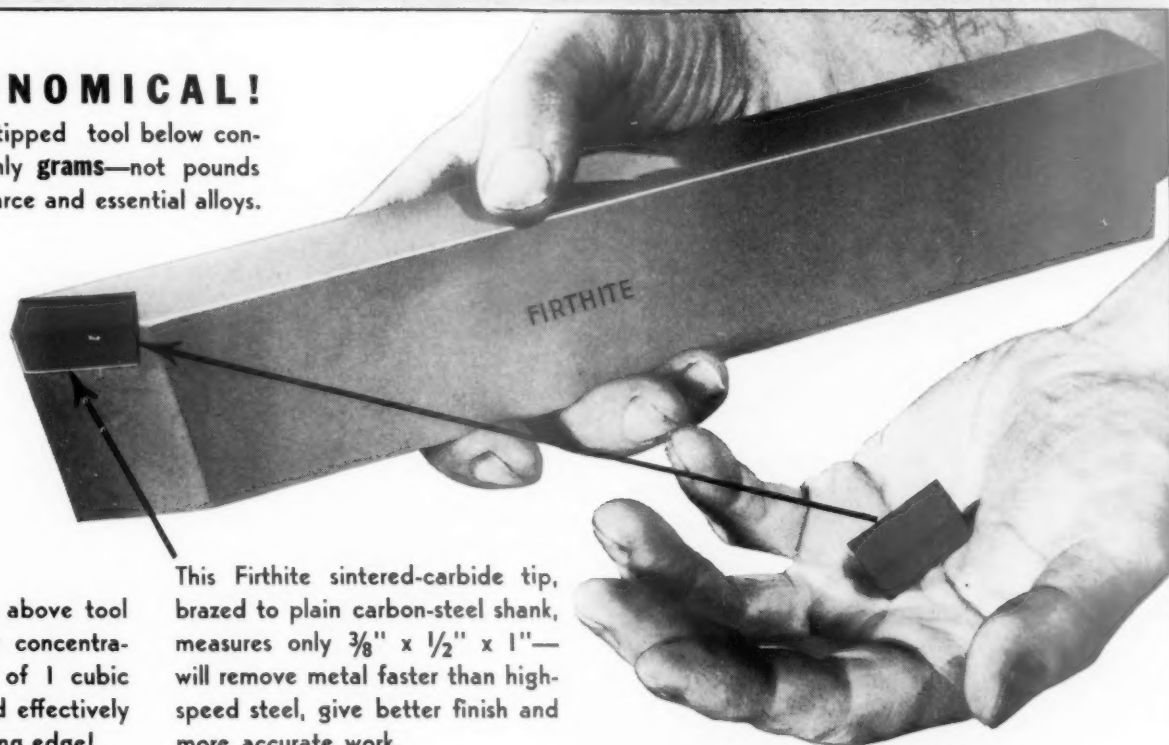


PINK on the above tool shows alloy diffusion through 24 cubic inches. A needless waste!

In the above 2" x 1" x 12" high-speed steel tool, only that part of the alloy at the cutting edge is of immediate usefulness—the balance is lost for present requirements.

ECONOMICAL!

Firthite-tipped tool below contains only grams—not pounds—of scarce and essential alloys.



RED on the above tool shows alloy concentration, $\frac{3}{16}$ of 1 cubic inch, placed effectively at the cutting edge!

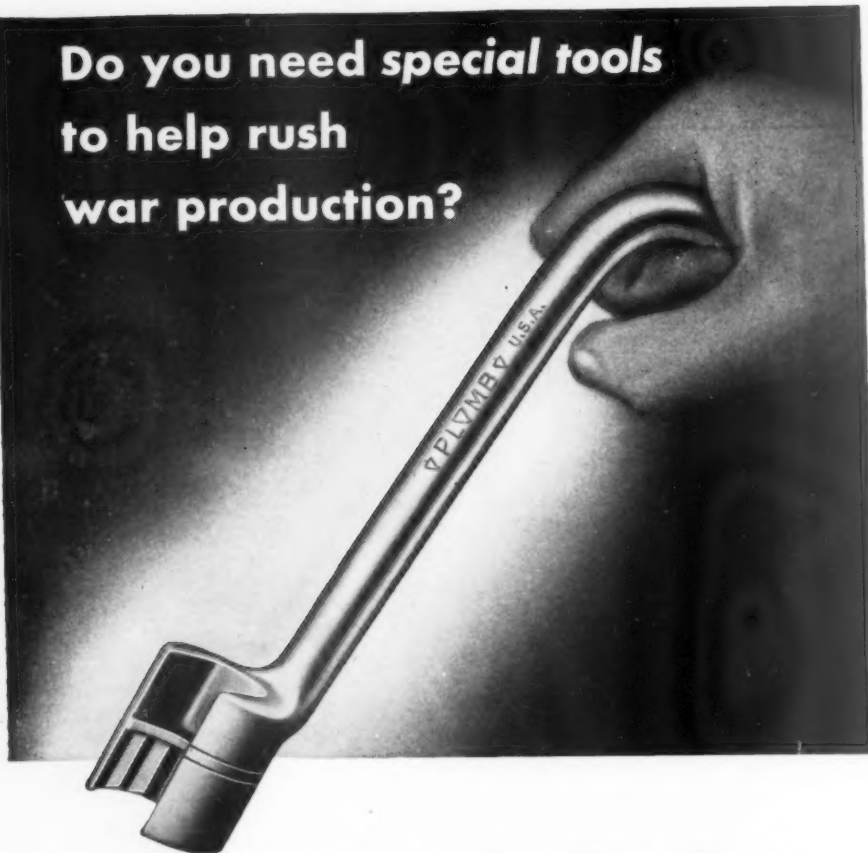
This Firthite sintered-carbide tip, brazed to plain carbon-steel shank, measures only $\frac{3}{8}$ " x $\frac{1}{2}$ " x 1"—will remove metal faster than high-speed steel, give better finish and more accurate work.

Firth-Sterling
STEEL COMPANY

FIRTHITE

Offices: McKEESPORT, PA. NEW YORK • HARTFORD • PHILADELPHIA • CLEVELAND DAYTON • DETROIT • CHICAGO • LOS ANGELES

**Do you need special tools
to help rush
war production?**



PLOMB ENGINEERS *Can Help You!*

Consult us for design and manufacture of special hand tools to reach the hard-to-get-at spots in your war production job. Plomb engineers have helped many manufacturers find the answers to their problems. They are ready to serve you... now or in the future.

Plomb dealers handle regular tools

Throughout the nation Plomb dealers can supply you with regular Plomb hand tools of all types to meet your war needs. See the one in your locality for stock tools.

Facilities of 36 factories to serve you

To meet war demands for Plomb Tools, 33 sub-contracting companies help Plomb's own three factories make them. This makes possible a double service to you. See your Plomb dealer for **regular** hand tools... consult us for your **special** hand tool needs.

▽ PLOMB ▽

Fine Hand Tools for All Industries



**PLOMB TOOLS CONTRACTING CO. A Division of the
PLOMB TOOL COMPANY
LOS ANGELES 9 CALIFORNIA**

When writing Plomb Tool Company please mention Purchasing

(Continued from page 122)

crystals, quartz crystal products, tantalite, tantalum, and others.

In the first instance OPA may adjust prices by an amount necessary to assure the maintenance or expansion of such production and provide for a reasonable operating margin. In the second instance, where the supply situation is less critical and essential, OPA, in order to prevent the loss of low-priced output, may adjust a producer's maximum prices to cover operating costs. Adjusted prices will not be above the general level of prices prevailing for alternative sources of the supply.

ANTHRACITE INCREASED 50¢ PER TON

Increase in the maximum prices of Pennsylvania anthracite of approximately 50¢ a ton, reflecting higher production costs, is announced by the Office of Price Administration. The new prices went into effect January 9, at both mine and retail levels.

The new price schedule reflects increases of from 50-55¢ on domestic and pea sizes and 30-45¢ a ton for steam sizes, f.o.b. mine. The schedule is contained in Amendment No. 10 to Maximum Price Regulation 112—Pennsylvania Anthracite. At dealer levels the new prices are authorized in revised Maximum Price Regulation No. 122—Solid Fuels Sold and Delivered by Dealers.

FLUORSPAR NOW UNDER WPB CONTROL

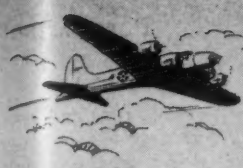
Because of the growing shortage of fluorspar for steel production, shipments by producers to users of both metallurgical and ceramic grade fluorspar will be controlled by WPB. The program forbids any producer or shipper to ship fluorspar to persons appearing on Restricted Shipping Lists sent to producers each month by WPB. The control is established under Regulation No. 1, which provides that no person may accept delivery of any material if his inventory of such material is or will be by reason of such delivery greater than a "practical working minimum".

USERS URGED TO CONSERVE HAND TRUCKS

Problems arising from the expanding need for hand trucks and the increasing shortage of critical materials used in their manufacture were discussed at a recent meeting of the Hand Truck Advisory Committee held with officials of the War Production Board.

The Committee was informed that the transportation of war and essential civilian supplies is making ever greater demands on hand trucks, which form a necessary link in the movement of supplies. It agreed that the industry should encourage its customers to keep their trucks in good repair and that producers should be made aware of the need for making repair parts for trucks already in use rather than manufacturing new ones. Since the life of a hand truck is fairly long, if it is adequately cared for and repaired, the promotion of a program by

(Continued on page 126)



HOW AND WHY



WILLIAMS' TOOLS AID WAR PRODUCTION

DATA ON "VULCAN" EYE BOLTS



● Eye Bolts are used extensively to facilitate the moving, installation and handling of machines, equipment, gigs, etc. Many designers place Eye Bolts at strategic locations on their machines to eliminate hazardous stresses that would cause torsional weave or misalignment of critical sections or surfaces. In addition to these common industrial uses, Eye Bolts are today widely used on such war equipment as guns, tanks and boats for lifting and towing purposes. Eye Bolt failure, in addition to endangering life, may cause damage to delicate or costly mechanisms. *Strength and Safety* are therefore the fundamental essentials of Eye Bolt design.

Williams' "Vulcan" Eye Bolts are weldless, being drop-forged from a solid blank of carbon steel. After forging they are heat-treated to further increase their strength and toughness and reduce liability of breakage. Every "Vulcan" Eye Bolt is then individually proof-tested on a standard tension machine to *fifty percent beyond* its rated "safe working load." Each Eye Bolt so tested and approved is stamped with the circular identifying mark shown in the illustration at left.

The following data is intended to help users in the selection of available standard patterns and sizes. These "Vulcan" Eye Bolts can be furnished blank, from stock. Plain and Shoulder Patterns are carried in stock threaded U. S. Std., but Miscellaneous Patterns must be threaded to order.



SHOULDER PATTERN "VULCAN"

No.	Shank			Eye, Diameter		Capacity Blanks; Tons of 2000 lbs.	
	Diam.; Nominal Rough Size; Blank	Std. Lgth. under Shldr. Blank and Thd.	Max. Lgth. in Stock; Blank	Inside	Outside	Safe Working Load	Breaking Strain, Apprx.
21	1/4	1	3	3/4	1 3/16	.2	1.5
22	5/16	1 1/8	4	7/8	1 7/16	.4	2.
23	3/8	1 1/4	4 1/2	1	1 21/32	.7	3.
24	7/16	1 3/8	4 1/2	1 3/32	1 27/32	1.	4.
25	1/2	1 1/2	4 1/2	1 3/16	2 1/16	1.3	5.
26	9/16	1 5/8	4 1/2	1 9/32	2 9/32	1.5	6.
27	5/8	1 3/4	4 1/2	1 3/8	2 1/2	2.	8.
28	3/4	2	5	1 1/2	2 13/16	3.	12.
29	7/8	2 1/4	5	1 11/16	3 1/4	3.5	16.
30	1	2 1/2	5	1 13/16	3 9/16	4.	20.
31	1 1/8	2 3/4	5	2	4	5.	23.
32	1 1/4	3	6	2 3/16	4 7/16	7.5	33.
34	1 1/2	3 1/2	6	2 1/2	5 3/16	9.	42.
35	1 3/4	4	7	2 7/8	6 1/16	11.	53.
36	2	4	8	3 1/4	6 7/8	13.	68.



PLAIN PATTERN "VULCAN"

No.	Shank			Diameter Eye		Capacity Blanks; Tons of 2000 lbs.	
	Diam.; Nominal Rough Size; Blank	Std. Length under Eye, Blank and Thd.	Max. Length in Stock; Blank	Inside	Outside	Safe Working Load	Breaking Strain, Apprx.
3	3/8	1 1/4	4 1/2	1	1 21/32	.7	3.
4	7/16	1 3/8	4 1/2	1 3/32	1 27/32	1.	4.
5	1/2	1 1/2	4 1/2	1 3/16	2 1/16	1.3	5.
6	9/16	1 5/8	4 1/2	1 9/32	2 9/32	1.5	6.
7	5/8	1 3/4	4 1/2	1 3/8	2 1/2	2.	8.
8	3/4	2	5	1 1/2	2 13/16	3.	12.
9	7/8	2 1/4	5	1 11/16	3 1/4	3.5	16.
10	1	2 1/2	5	1 13/16	3 9/16	4.	20.
11	1 1/8	2 3/4	5	2	4	5.	23.
12	1 1/4	3	6	2 3/16	4 7/16	7.5	33.
14	1 1/2	3 1/2	6	2 1/2	5 3/16	9.	42.
15	1 3/4	3 3/4	6	2 7/8	6 1/16	11.	53.
16	2	4	6	3 1/4	6 7/8	13.	68.
17	2 1/2	5	6	4	8 9/16	16.	85.



TYPE A

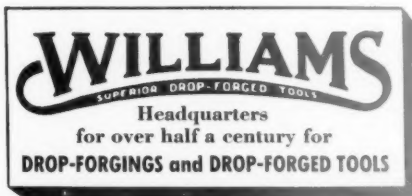


TYPE B

MISCELLANEOUS PATTERNS

These two styles are carried in stock blank (not threaded) in the following shank dimensions:

Type A, 1/4" x 3/4" to 1-1/16" x 4-1/8"
Type B, 1/4" x 1/2" to 1" x 2-3/4"



Sold by Leading Industrial Distributors Everywhere . . . J. H. Williams & Co., Buffalo, N. Y.

TOOL HOLDERS



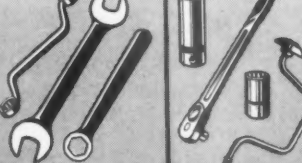
"C" CLAMPS



LATHE DOGS



WRENCHES OF ALL TYPES



PIPE TONGS



THUMB NUTS SCREWS



HOIST HOOKS



EYE BOLTS



Every Minute Saved in Maintenance . . . Means More Productive Hours

And these husky "King-clip" valves are doing just that . . . saving those precious minutes that add up to more productive time. With "King-



Fig. 1640
Iron Body
Bronze Mounted

Fig. 1644
All-iron

clips" on the job, maintenance is cut to a minimum . . . users are assured of a practically permanent installation, free from the hundred-and-one "valve headaches".

"King-clip" Valves are doing their part in another respect, too . . . in conserving critical materials. Since only the working parts are made of bronze, these iron body valves use less copper, tin and other scarce materials than all-bronze valves, and they perform equally as well on many services.

And here's an important point . . . you are likely to get better deliveries on "King-clips" than on the scarcer all-bronze valves. The complete facilities of Lunkenheimer distributors are at your service. They'll go out to help you get the things you need.

Since virtually all materials used in the manufacture of valves are on the list of critical materials, valve users are urged to furnish the highest possible preference ratings and proper "end use" information on their orders. This will be of mutual helpfulness.

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U.S.A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

Bronze, Iron and Steel Valves, 125 to 2500 lb. S. P. for all Industries;
Boiler Mountings, Lubricating Devices, Aircraft Fittings

(Continued from page 124)

the industry calling for such care and repair, it was agreed, should lessen the demand for new trucks and, at the same time, permit customers to continue all use of hand trucks.

The use of rubber tires, and rubber wheels and casters for hand trucks was prohibited by WPB General Limitation Order L-111, issued in May, 1942, except in cases where the absence of rubber would create a definite explosion hazard.

ALLEN-BRADLEY CO. HOSTS TO MILWAUKEE PURCHASING AGENTS

The Allen-Bradley Company, Milwaukee, manufacturers of electrical equipment, again played host to the Milwaukee Association of Purchasing Agents, at the association's January meeting.

UNUSED PRIORITY MATERIALS MAY BE RE-APPLIED OR SOLD

By an amendment of Priorities Regulation No. 1, issued by the War Production Board, persons who have purchased material with the assistance of preference ratings may, under certain circumstances, sell it or make use of it for purposes other than the one for which it was originally obtained.

As amended, the basic document of the priorities system now provides that, if for any reason material obtained with priority assistance or by allocation cannot be used as first intended, the owner may:

- (1) use it to fill purchase orders placed with him which bear a rating of AA-5 or higher, or a rating at least as high as that upon which the material was obtained, provided such use is permitted by other regulations and orders controlling the production or distribution of the particular material or item;
- (2) use it for his own needs, if he has been authorized to obtain material for such use by applying or extending a preference rating of AA-5 or higher;
- (3) re-deliver the material to the person from whom he purchased it.

In case an owner is not able to use or dispose of material in any of the above ways, he may file a report with his WPB regional office, which will assist in redistribution of his property.

Principal effect of the amendment will be upon finished products and sub-assemblies, sale of which is not covered by the terms of Priorities Regulation No. 13.

COPPER CLAD STEEL SCRAP AND ZINC DUST UNDER ALLOCATION

Copper clad steel scrap has been brought under full allocation control by Copper Order M-9-b as amended. The revised order also sets up a special procedure for the disposal of fired shell cases made of copper, copper-base alloy or copper clad steel in amounts of 10 pounds or more.

Persons seeking authorization to accept delivery of copper clad shell cases must furnish the WPB with a letter setting

(Continued on page 128)

When writing The Lunkenheimer Co. please mention Purchasing

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*He changes junk to **SCRAP!***

"NOTHING IS MORE IMPORTANT TO WAR PRODUCTION THAN SCRAP"

DONALD M. NELSON

This grand guy knows you're right, Mr. Nelson.

For the SCRAP that he and about 6500 other yard dealers prepare, when combined with smelted iron, contributes at least *half of the resultant total tonnage of new steel*. The steel industry might as well try to do without *iron ore* as attempt to produce *enough* war steel without *prepared* SCRAP from these yards.

With no thought of praise, nor expectation of reward other than a modest profit, this patriotic little band of scrap dealers will supply more than 20,000,000 tons of vital scrap this year!

Into their yards flows an endless stream of junk . . . out,

to the steel mills, pours a constant supply of SCRAP. Graded to as many as 75 specifications . . . minced by giant alligator shears to foot-square electric furnace fodder . . . flame-cut to suitable open-hearth lengths . . . squeezed by great presses into bale-size furnace charges. Many millions of dollars are invested in special equipment by these dealer yards to *prepare* SCRAP!

Are these the "forgotten men" of 1942? No "E" pennants or other merit banners flutter from their flagstaffs . . . yet without them few such awards would have been possible.

Forgotten, did we say? Well, not quite. Happily a growing appreciation of their vital contribution can be noted. *Well done*, Scrap Dealers of America!

Pittsburgh Steel Co.

GRANT BUILDING PITTSBURGH, PA.

GUARANTEED
Unfailing PERFORMANCE



Completely Cold Forged

HOL - KROME FIBRO FORGED Socket Screws are guaranteed by Holo-Krome to give Unfailing Performance—the kind of performance demanded today on every front line of Industrial War Production.

Unfailing Performance is Guaranteed by Holo-Krome because of the superior method patented and exclusively used by Holo-Krome in the production of these **PRECISION MADE SCREWS.**

WRITE FOR CATALOG OF SOCKET SCREW STANDARDS

HOL - KROME
fibro forged
SOCKET SCREWS

THE HOL - KROME SCREW CORP., HARTFORD, CONN., U.S.A.

When writing Holo-Krome Screw Corp. please mention Purchasing

(Continued from page 126)

forth all details including the end use to which the material will be put. Persons seeking delivery of copper or copper base alloy shell cases must apply to the copper division on form PD-59.

Zinc dust, under a new WPB general preference order, was put under complete allocation and use control January 1.

**GLASS PRECISION GAGES
SUBSTITUTED FOR STEEL**

Plans for large-scale substitution of glass for steel in the manufacture of precision gages used to inspect war material have been announced by the Conservation Division of WPB. Hundreds of thousands of steel gages are now in use by manufacturers and inspectors of ordnance items. Half of them can be replaced by glass gages, the Army Ordnance Department recently reported. The glass gage no longer in the experimental stage is used in the Frankfort Arsenal.

Saving of three quarters of the man hours of machine tool labor required for the manufacture of steel precision gages, as well as significant quantities of critical alloy tool steel, will be obtained by use of glass gages, and the cost of glass gages is only half that of steel gages once the molds for the glass gages are made. Visibility in inspection, not always possible with steel will tend to produce a superior product. Perspiration on the hands of inspectors has no corrosive effect, and the thermal conductivity of glass is less than that of steel.

It is also held that the glass gage will automatically eliminate the necessity for many greasings and degreasings, since no question of rust is involved. Glass appears to have abrasive resisting qualities equal to or better than steel in many operations. Scratches on glass do not burr and do not change the effective size of the gage. Handling glass gages is easier than steel gages inasmuch as the glass gage is much lighter.

The Conservation Division is preparing for Army Ordnance a list of the companies which have facilities for the manufacture of the glass blanks to be finished into precision gages by regular gage manufacturers.

**URGE MANUFACTURERS TO
RELEASE IDLE MOTORS**

Large numbers of motors are urgently needed for war production purposes and in an effort to put every usable motor in the country to work producing war materials, the WPB is appealing to manufacturers who have idle motors to make them available for sale, either to war plants or to used equipment dealers, or to inform the General Industrial Equipment Division of the War Production Board, Washington, of their availability.

Hundreds of thousands of usable motors lie idle in civilian goods plants, according to John Gammell, Chief of the Electrical Equipment Branch of the General Industrial Equipment Division, and it is the responsibility of every manufacturer to put his 'slacker' motors to work or to sell them

(Continued on page 130)

a 100-page Blueprint...to help you plan your

Conservation Strategy



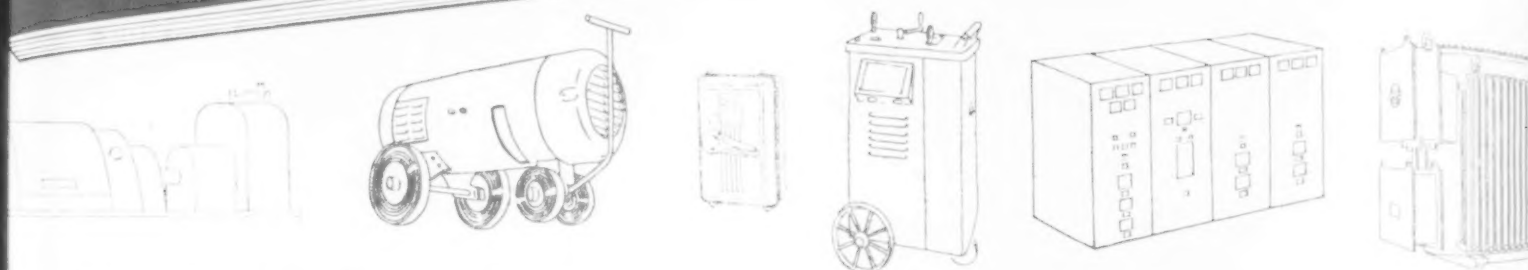
Wartime Conservation

RECOMMENDATIONS FOR EFFECTING IMMEDIATE SAVINGS
OF CRITICAL MATERIALS IN THE APPLICATION AND USE OF
WESTINGHOUSE EQUIPMENT... AND AT THE SAME TIME
GETTING MORE PRODUCTION OUT OF PRESENT EQUIPMENT

WESTINGHOUSE ELECTRIC & MANUFACTURING CO., EAST PITTSBURGH, PA.

THIS BOOK CONTAINS DEFINITE RECOMMENDATIONS...

- From generator to motor... Critical Material savings in selection, application and use of electrical equipment.
- On the production line... New methods of speeding production made possible by Westinghouse developments.
- Keep 'em running! Maintenance and repair service as an aid to production.
- Replacement—not substitution... Micarta and Prestite are superior to the Critical Materials which they replace.
- All in the day's work... How Westinghouse is saving Critical Materials in its own manufacturing operations.



We no longer are "too rich" to worry—the Axis has more Critical Materials than we do.

To help America save Critical Materials... to assist industry in planning its conservation strategy, Westinghouse has published an authoritative 100-page book. It contains recommendations for effecting immediate savings of Critical Materials in the selection, application and use of electrical equipment... and at the same time getting more production from present equipment.

Write for your copy today (company letterheads, please!). Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., Dept. 7-N.

J-90461

Westinghouse

PLANTS IN 25 CITIES ...OFFICES EVERYWHERE

Comparison of United Nations and Axis resources prior to war and today

	Before the war		Now	
	United Nations	Axis	U. Nations	Axis
STEEL	73%	27%	50%	50%
COPPER	94%	6%	83%	17%
TIN	99+%	1-%	35%	65%
ALUMINUM	68%	32%	42%	58%
PIG IRON	75%	25%	44%	56%
TUNGSTEN	95%	5%	65%	35%
MAGNESIUM	44%	56%	32%	68%





STOP THESE HIDDEN LEAKS THAT WASTE YOUR DOLLARS...

Hundreds of Plants Effect Big Savings

with

**Carey
HEAT INSULATIONS**

Many industrial plants have hidden profit leaks in the form of waste in production, or excessive overhead. While these leaks may be small in themselves, they may add up to a very costly total.

One pair of bare, 10-inch flanges at 350° F., waste one ton of coal per year. One foot of bare, 10" steam pipe, heated to 700° F., can cost you heavy heat loss. Figuring steam cost at 30¢ per million B. T. U., insulation 3" thick, shows an annual saving of \$24.76 per foot of pipe.

Heat loss, through inadequately insulated pipe, is one of the most common of these hidden profit leaks. Scientific tests show, and hundreds of installations prove, that from 70% to 98% of this loss may be saved by correct insulation.

Fortunately for industry, there is a practical way, not only to find these wastes, but also to eliminate them. The Carey organization is equipped to help you uncover the profit leaks in your plant. A phone call or letter to our nearest branch, will bring a representative. Catalog "Heat Insulation for Industry" mailed on request to Dept. 68

INDUSTRIAL BUILDING PRODUCTS OF ASPHALT — ASBESTOS — MAGNESIA

ROOFING... SIDING... FLOORING... INSULATIONS... ROOFINGS AND CEMENTS
WATERPROOFING MATERIALS... EXPANSION JOINT... ASBESTOS PAPER AND MILLBOARD



The PHILIP CAREY Manufacturing Company

Dependable Products Since 1873

Lockland, • Cincinnati, Ohio •

IN CANADA: THE PHILIP CAREY COMPANY, LTD.
Office and Factory: LENNOXVILLE, P. Q.

(Continued from page 128)

to someone who needs them.

Under General Conservation Order L-221, all purchasers desiring new motors must certify that they have no idle motor in their possession which can be adapted; that they have attempted to obtain a used motor from at least three dealers; that the motor is not being purchased for replacement purposes, and that it is required for immediate use. The purchase of replacement motors requires approval by the War Production Board, granted only when repairing is impossible and used equipment unobtainable.

When used equipment cannot be found by an applicant, he is urged to make his needs known to the Electrical Equipment Branch, Ind. Eqpt. Div., W.P.B., one of whose functions is to assist purchasers to locate hard-to-find types of motors, which they are unable to locate through their own efforts.

1 1 1

MANAGERS APPOINTED TO EXPEDITE AIR SHIPMENTS

To deal with the complex problems involved in handling increasing volume of air express, the Air Express Division of Railway Express Agency announces the creation of the post of air express manager in each of its four operating divisions throughout the country.

The new appointees are Ralph W. Starkey for the agency's eastern departments, headquarters New York; P. H. Cummings for the central departments, headquarters Chicago; M. G. Lickteig for the western departments, headquarters San Francisco; V. M. Grimsley for the southern departments, headquarters Atlanta.

Each of these air express managers will further coordinate the efforts of express agency personnel in the promotion and expedited handling of air traffic, it was announced, and will work in close cooperation with commercial airlines to develop the traffic in anticipation of present and post-war growth.

1 1 1

"UMBRELLA" SHIELDS WAR PLANTS FROM LIGHTNING

A wire "umbrella" to shield vital explosive plants and oil storage centers from lightning has been developed by Dr. Gilbert D. McCann, Westinghouse Electric & Manufacturing Company engineer. It is already being used by some war industries and one huge ordnance plant. Using a minimum of strategic materials, the shield easily deflects lightning driving earthward at more than 11 million miles a minute.

The shield consists simply of a steel wire strung above the building to be protected and anchored on tall wood poles at each end. The wire is then connected to steel rods buried in the ground.

This method saves copper for other war uses. Previously explosives plants or oil depots were guarded by lightning rods which required about 250 pounds of copper attached to the building and buried in the surrounding ground. An umbrella for the same building can be erected with

(Continued on page 132)

When writing The Philip Carey Manufacturing Company please mention Purchasing

NO WAR, EVER BEFORE, SAW SHIPS BUILT IN 6 DAYS

...nor the modern *Preformed wire rope*

THAT LIFTS AND SWINGS THEIR PARTS INTO PLACE

New to this war—the ship-building speed records being shattered from day to day.

New to this war, too—the Preformed Wire Rope which is playing such a giant role in the ship-building program; *new to this war*—though tested and proved through years of peacetime production, as if in preparation for the tough wartime tasks ahead.

Tested and proved stronger, longer lasting, more flexible, more easily handled—cutting shutdowns, cutting accidents, cutting costs—Preformed Wire Rope is doing a *front-line* job on hundreds of assignments in ship-building, as well as maintaining its *home-front* job in industry.

Ask your own wire rope manufacturer or supplier





OVERHEAD HIGHWAYS that speed War production

★ Throughout the nation CM Meteor heavy duty electric hoists ride the overhead highways... speed War production in the lifting of materials and assemblies. CM Meteors lessen worker fatigue and reduce time-wasting interruptions. One hand push button control provides accurate spotting and leaves the other hand free for guiding the load. The CM Meteor is readily adaptable to present overhead monorail systems and cranes. Fully illustrated engineering catalog No. 142 explains why the CM Meteor will help you speed production.

CM METEOR

★ ★ ★
INVEST REGULARLY IN VICTORY—BUY WAR BONDS AND STAMPS

★ ★ ★
CHISHOLM-MOORE HOIST CORPORATION

(Division of Columbus-McKinnon Chain Corp.)

120 FREMONT AVENUE, TONAWANDA, NEW YORK

BRANCH OFFICES: NEW YORK • CHICAGO • CLEVELAND

When writing Chisholm-Moore Hoist Corporation please mention Purchasing

(Continued from page 130)

only 60 pounds of steel and two wood poles. With the new design danger of lightning leaping to metal sections of the building and causing sparks has been eliminated.

Studies of lightning strokes on power lines show that each square mile of sky hurls about 10 thunderbolts at the ground each year. Modern ordnance plants have several hundred buildings spread over a large area so each plant will be target for lightning several times a year. Just one of those strokes could cause a disastrous explosion or fire if proper protective devices were lacking.

Another lightning protection plan suggested by Dr. McCann surrounds the building with six poles 10 feet higher than the roof. Steel wires extending from the top of each pole attract lightning from the area above the structure so that an invisible lightning-proof "blanket" is suspended over the roof. Thunderbolts are drawn to the steel tips of the poles and thence to the ground.

Lightning strokes sometimes have a peak current of 200,000 amperes, enough to supply a city of 50,000 people with electricity momentarily. The electrical pressure in the stroke may be 20 million volts, great enough to blow out 200 million household fuses.

WAR PRODUCTION REVIEW

A report, "War Production in 1942", has been issued by the War Production Board's Division of Information. The 21-page pamphlet consists of three principal sections: "The First Year"—a review of production accomplishments and problems. "The Major Problems"—in which materials, conservation, priorities and allocations, conversion, smaller war plants, concentration, construction and facilities, program adjustments, and labor are discussed in detail. "Organizational Changes"—a description of the present organization in relation to the organization from which it evolved.

Copies may be obtained by writing to the Office of War Information, 1400 Pennsylvania Avenue, N.W., Washington, D. C.

1943 STEEL PRODUCTION

United States steel production in 1943 will approach twice the combined output of the Axis Nations, according to Chairman Nelson of the WPB. Pointing out that combined steel production of Germany, Italy and Japan is estimated at 50,000,000 to 55,000,000 ingot tons annually, Mr. Nelson declared that this country's steel capacity has already increased to more than 89,000,000 tons, and on completion of the expansion program in mid-1943, will be approximately 97,000,000 tons. These figures compare with actual production in 1940 of 67,000,000 ingot tons.

"This does not mean that there will not be difficulties here and there for one type of product or another," said Mr. Nelson. "Nor does it mean that we are producing enough steel for less-essential civilian uses."

USE OF PD-1X FORM FOR PRIORITY PURCHASING EXPANDED

Use of the PD-1X application form by distributors for obtaining priority assistance in purchasing supplies and materials for resale has been considerably expanded in the past few months, the Industrial and Hardware Supplies Branch, Wholesale and Retail Trade Division, revealed today.

Originally, the form was limited in its use to distributors, wholesalers, and jobbers dealing in supplies and materials for 19 specified industries. A distributor requiring priority assistance in procuring such supplies for resale purposes was entitled to file a PD-1X application with the War Production Board requesting the rating necessary to obtain the material.

However, as the war program developed, distributors experienced increasing difficulty in replacing their stocks of supplies other than those listed on the form and as a result the permitted use of the PD-1X form was broadened to cope with the tightening situation.

Today, the form can be used for applying for priority assistance in procuring all types of supplies, particularly of a maintenance, repair, or operating nature, if they are to be resold to war industries or essential civilian enterprises.

Among the materials which the PD-1X form is now being used for are the following:

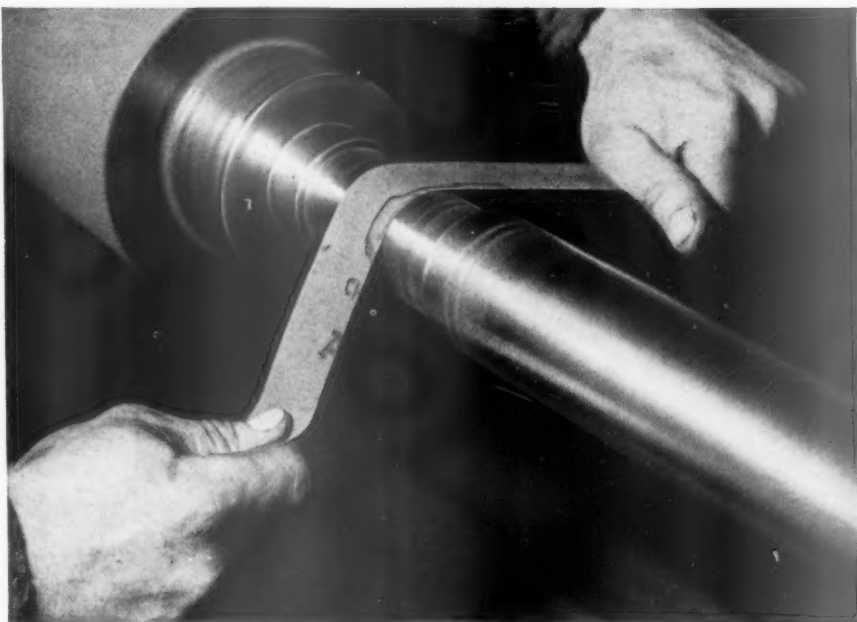
Abrasives, Asbestos Products, Artificial Leather Products (some types), Aviation Supplies, Barber & Beauty Shop Supplies, Blasting Equipment and Accessories, Brushes and Brooms, Charcoal and Charcoal Products, Chemicals and Plastics (some types), Construction Equipment, Cork and certain Cork Products, Cutlery, Drawing (drafting) Supplies, Fibrous Glass Products, Health Supplies—including dental, surgical, orthopedic, optical, X-Ray, etc., Janitors' Supplies, Laboratory Supplies, Lumber, Mining Equipment, Motion Picture Theatre Equipment and Replacement parts, Mortician Goods, Notions, (common pins, safety pins, needles, etc.), Paints, Varnishes, Thinners, etc., Photographers' Supplies, Printing & Blue Printing Equipment, Protective Clothing & Equipment, Radio Tubes and Repair Parts, Refrigerator Parts, Rubber Products (some types), Safety & Technical Equipment, Sewing Machine Supplies (industrial and household), Shipbuilding Supplies, Shoe Machinery Supplies and Shoe Findings, Textile Machinery Parts and Accessories, Tire Retreading and Recapping Equipment, and Washing Machine Repair Parts.

USE OF PULP, PAPER OR PAPERBOARD RESTRICTED

Under Conservation Order M-241, amended and effective January 8, the production of newsprint, groundwood papers, book, writing and wrapping papers is cut from 10% to 20%, as is the production of absorbent papers, boxboards, cardboards and industrial boards. Paper products whose production is cut 10% includes

FOR EVERYTHING FROM A BOLT HEAD TO A TANK . . .

We've got the abrasives to do the job!



Armour's Electrocoated Alundum Cloth Helps Meet Production Schedules . . . On Big Jobs and Small!

Whatever your customers' products, there are Armour Abrasives built to meet their abrasive needs efficiently and fast.

Armour's Electrocoated Alundum Cloth is an example.

This tough, long-wearing, clean-cutting abrasive is made by a patented Electrostatic process that adds extra wear and cleaner, even cutting to every sheet used.

Armour's Electrocoated Alundum Cloth comes in the handy fifty-yard economy roll, to end lost time between stock room and job . . . and is also available in 9 by 11 inch sheets.

It's versatile, because it answers virtually every requirement for speedy, uniform metal finishing.

And it's just one of the many types and grades available to those who order Armour's Abrasives.

Today, learn how Armour's Electrocoated Alundum Cloth can help your customer meet stepped-up production schedules. Wire or write Armour Sandpaper Works, Chicago, or call in one of Armour's Technical Counselors for on-the-job planning of your clients' abrasive needs.

Quick Service From Branches In

BOSTON	NEW YORK	PHILADELPHIA	MILWAUKEE
DETROIT	PITTSBURGH	CLEVELAND	INDIANAPOLIS
ST. LOUIS	SAN FRANCISCO	LOS ANGELES	SEATTLE
	HIGH POINT, N. C.	CINCINNATI	

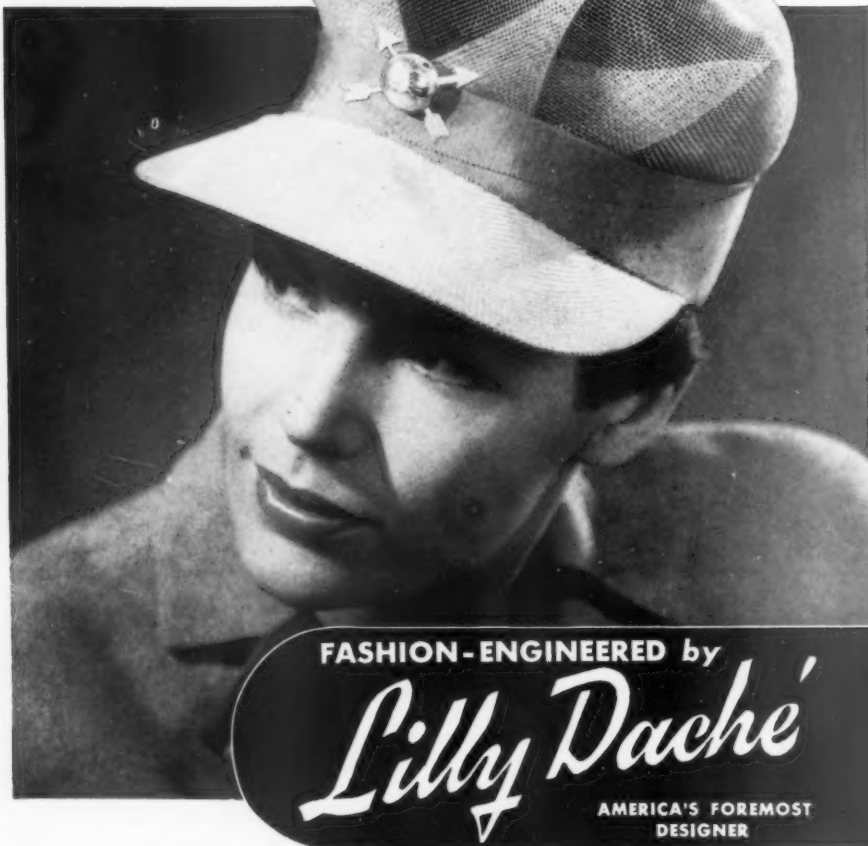
ARMOUR SANDPAPER WORKS

DIVISION OF ARMOUR AND COMPANY

1355 WEST 31ST STREET • CHICAGO, ILLINOIS

When writing Armour Sandpaper Works please mention Purchasing

Now - THE Right HATS FOR THE WOMAN WAR WORKER!



- | | |
|---------------------------|---------------------------|
| 1. HIGH-FASHION DESIGNS | 6. MOISTUREPROOF |
| 2. HIGH-QUALITY PLASTICS | 7. COMPLETE HAIR COVERAGE |
| 3. FOUR ATTRACTIVE STYLES | 8. WASHABLE |
| 4. COOL | 9. FIT ALL HEADS |
| 5. LIGHTWEIGHT | |

When the country's leading designer of top-fashion hats for women produces an industrial line—that's news!

And when these Lilly Dache' creations have the smartness of her salon models—carry the Dache' label—and meet all of the requirements of your women workers for *beauty, protection and durability*—you have a morale-sustaining opportunity that warrants immediate action. Write today for our descriptive Bulletin—and ask to have an M.S.A. representative show you these attractive hat designs!



Just off the press—
ready for you now
—the detailed story
of Lilly Dache' In-
dustrial Hats.



MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS and MEADE STREETS, PITTSBURGH, PA.

District Representatives in Principal Cities

various stationery items, facial tissues, towels and waxed papers, and decorative papers are cut 50%. Under List B of M-241-a, is listed the article or class of articles in the manufacture of which pulp, paper or paperboard may not be used. This includes a long list of decorative specialties, laundry specialties and novelties, as well as such things as poker chips, tablecloths, slippers, window drapes, place and table mats, aprons, coin cards and other non-essentials.

1 1 1

CMP SPECIALISTS WANTED

The Federal Civil Service Commission announces nationwide search for experienced production specialists to administer WPB's new Controlled Materials Plan, particularly to assist in allotment of critical materials; no written test, no maximum age limit; industrial or engineering experience desired in following lines: copper, aluminum, carbon steel, alloy steel, machine tools, machinery, transportation equipment, engineering materials.

1 1 1

MAY ADD COSTS OF SPECIAL PACKING TO CEILING PRICES

Because goods sold to Government Procurement agencies on behalf of the Lend-Lease Administration and to the Army and Navy on their own account often require special packing to withstand rough treatment on long hauls and while being unloaded under difficult conditions, OPA has permitted sellers of such goods under applicable price regulations to add costs of special packing to established ceiling prices.

1 1 1

MILITARY PLANES BRING IN STRATEGIC MATERIALS

Army and Navy ferry planes are now bringing strategic materials to America from remote corners of the earth. The materials are carried in the planes of the Army Air Transport Command, the Army Air Force Service Command, and the Navy Air Transport Service, returning after delivery of personnel and supplies to the fighting fronts. The plans for this world-wide air freight service were worked out by the Board of Economic Warfare in consultation with Army and Navy authorities. To date, not a pound of cargo has been lost.

Block mica, essential to the manufacture of certain aircraft parts, has been flown from India. Bristles needed by the Navy and silk for parachutes have come via air from the heart of China. Beetles were transported from the Fiji Islands to Honduras to check a root weevil attacking hemp at an experimental plantation.

The BEW learned that there was available space on returning planes of the China National Aviation Corporation. Contracts were quickly modified to provide for the delivery of bristles, tungsten, silk and tin to airports in China, whence the materials were flown out in that order of priority. In eight weeks, 32 tons of bristles, 70 tons of silk, 47 tons of tin and

(Continued on page 136)

When writing Mine Safety Appliances Company please mention Purchasing



HOW TO PACK A WAR

- Even prosaic packaging is different this time. Ammunition, foods, tank, truck and plane parts for the Second Front—and all the Fronts—are going to war more safely, quickly and handily because they are packed scientifically for the job.
- Special packages are the rule. Packages that meet military and other government specifications . . . packages that even go beyond these requirements to expedite handling, cut down waste and damage, save time and materials, weight and shipping space.
- To every present or prospective war contractor, Container Corporation offers the complete facilities of its strategically located plants, its staff's 2 years of experience in military packaging, the fruits of months of work with the government departments and agencies.
- Within our own organization, we combine the manufacture of boards, the design and fabrication of countless types of paperboard packaging: corrugated and weather-proof fibre containers, folding cartons, and other packages in almost infinite variety.
- We'd like to send you a new booklet, "Paperboard Goes to War," a practical survey of war packaging as we are doing it today. Write or call our nearest office for it, and arrange to discuss your war packaging with our staff.




CONTAINER CORPORATION OF AMERICA

General Offices: 111 W. WASHINGTON ST., CHICAGO

New York • Rochester • Natick, Mass. • Philadelphia • Akron • Cincinnati • Cleveland • Circleville • Detroit • Indianapolis
 Wabash • Carthage • Anderson, Ind. • Peoria • Rock Island • Minneapolis • Baltimore • St. Louis • Ferdinand • Ft. Worth

EVERYTHING PAPERBOARD FOR EVERYTHING PACKED

When writing Container Corporation of America please mention Purchasing



**Be sure you use
the RIGHT BLADE for the job**

STARRETT *Makes It!*

S-M Molybdenum — High Speed Steel for power sawing — Standard Steel for hand sawing — *all* in the right size for the work — *all* made to meet Starrett standards of performance — to cut faster and last longer.

Your Mill Supply Distributor Sells It!

Order a trial supply. Your distributor is prepared to help you select the one best STARRETT blade for the job.

THE L. S. STARRETT CO.
ATHOL . . . MASSACHUSETTS, U. S. A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS • DIAL INDICATORS • GROUND FLAT STOCK
HACKSAWS • METAL CUTTING BANDSAWS • STEEL TAPES

When writing The L. S. Starrett Co. please mention Purchasing

(Continued from page 134)

70 tons of tungsten were moved from China to India. Later 98 tons of tungsten were flown out in 10 days.

American planes brought \$475,000 worth of platinum from points on the Persian Gulf to the United States.

Other materials that have been moved, or for the transportation of which plans have been laid, include: balsa wood from Central America, required for American gliders and British mosquito boats; tantalite, beryl ore, quartz crystals, industrial diamonds and mica from South Africa; crude rubber from Brazil; twenty tons of rubber seed from Liberia for planting in the Western hemisphere.

1 1 1

\$80,000 PURCHASE OF WAR BONDS FOR EMPLOYEE BONUS

W. H. Hallsteen, Vice President in Charge of Purchases for the Ilg Electric Ventilating Co., Chicago, recently made the sizable purchase of \$80,000 in United States War Bonds, to be distributed among the employees of the company as



Assistant Treasurer Graves, Washington, delivers bonus War Bonds to Ilg plant in person.

their yearly bonus. The transaction was considered by the vendor important enough to warrant delivery in person by Harold G. Graves, Assistant Treasurer of the United States, Washington, D. C., and Norman B. Collins, State Administrator of the Illinois War Savings Staff. Judging from the photograph of this event, everyone seems to be happy about the whole affair. The photograph also reveals that while the purchase was somewhat outside the ordinary line of departmental activities, some familiar purchasing features were encountered: i.e., conservation ("Please do not cut bag when opening") and returnable containers ("This bag should be returned to Federal Reserve Bank of Chicago").

1 1 1

WOOD FLUORESCENT REFLECTOR SAVES STEEL

The supply of iron, always considered inexhaustible, is critically short as a result of the war. This is particularly true of steel sheet, yet a single large new war plant normally would require as much as 100,000 square feet of 18 gage sheet for fluorescent lamp reflectors. This would be a five-foot strip nearly four miles long and weighing 20,000 pounds. A new

(Continued on page 138)

More Power per Pound



HANDLE

Steel air vents on top and bottom, pressed in housing, assure ample ventilation.

FIELD HOUSING

Steel inserts for housing assembly screws cast into plastic for permanency.

Steel commutator end bearing insert cast into housing. Also serves as ground connection for drill.

GEAR CASE COVER

3 steel bearing inserts welded in cluster are permanently cast in plastic to stand maximum stress.

GEAR CASE

Steel spindle bearing insert and steel intermediate bearing insert permanently cast in plastic housing.

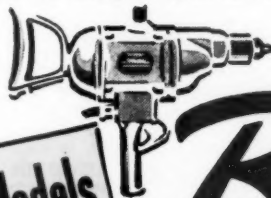
in the New Black & Decker "Drillite" Plastic Drill

BLACK & DECKER Engineers have done it again! A husky, new, lightweight drill with the *highest horsepower per pound of any drill ever produced by Black & Decker*. The housings of these $\frac{1}{4}$ " Standard and $\frac{3}{8}$ " Standard Drills—made from the modern new plastic . . . DRILLITE—were exclusively developed and perfected by eye-to-the-future Black & Decker Engineers. DRILLITE PLASTIC makes these tools a full pound lighter in weight—yet exhaustive tests prove

they stand up under hard, continuous running.

DRILLITE is a perfect insulator against dielectric shock, makes the drill cooler to handle, has high impact resistance. Screened air inlets insure ample ventilation. Handsome black finish provides lustrous, modern streamlined appearance.

Ask your nearby Black & Decker Distributor for complete specifications on the Electric Drills of Tomorrow! The Black & Decker Mfg. Co., 764 Penna Ave., Towson, Md.



LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS



$\frac{3}{8}$ " STANDARD DRILL
with End Handle
Weight . . . 5 $\frac{3}{8}$ lbs.



$\frac{1}{4}$ " STANDARD DRILL
with End Handle
Weight . . . 4 $\frac{1}{2}$ lbs.



$\frac{3}{8}$ " STANDARD DRILL
with Side Handle
Weight . . . 5 $\frac{3}{8}$ lbs.



$\frac{1}{4}$ " STANDARD DRILL
with Side Handle
Weight . . . 4 $\frac{1}{2}$ lbs.

When writing The Black & Decker Mfg. Co. please mention Purchasing

Your Guarantee of **FUTURE PERFORMANCE**

Below are listed just a few of the timely, helpful articles which have appeared in recent issues of Purchasing. Subsequent issues will continue to feature practical aids to Purchasing Executives that are just as significant and helpful. In addition, each issue will carry regular standard features which have earned for Purchasing the respect and confidence of the leading Purchasing Agents throughout the United States and Canada.

Handling Business Records in Today's Emergency
PURCHASING PREVIEWS—A Monthly Letter from
PURCHASING'S Washington Office
Substitution of Materials
The "How" of Conservation
Government Buying Geared to Emergency
New Products—Ideas
How to Save Rubber in War Use
Personalities in the News
Among the Associations
Faster Mail Service Starts in Office
Making Use of Salvage Materials
A Universal System of Stock Control
Longer Tool Life Means Fewer Tools to Buy
What Business May Expect in 1943
The Inside Story of the Controlled Materials Plan
Series on the Fundamental Principles of Purchasing
Raw Material Quality Control
Safety Equipment for Women Workers

Enroll today. Become a regular monthly reader of the magazine which has been serving Purchasing Agents for more than 27 years. The coupon below will start your annual subscription.

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205 East 42nd Street, New York, N. Y.

You may send me PURCHASING for One Year @ \$3.00. (Canada \$4.00.)

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Title

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Invoice to me ☐

Invoice Company ☐

(Continued on page 136)

kind of reflector saves all this steel, according to Westinghouse experts. It is made of processed wood pulp which is formed into an exceedingly dense, smooth, hard board by means of heat and high pressure. The reflector board is sprayed with a new synthetic enamel that dries under heat by polymerization. The molecules of enamel form into long chains producing a surface as hard and durable as steel. Unlike the porcelain-coated steel reflector, the new surface is not chipped when the unit is dropped or struck with a hammer.

The new reflector saves sheet steel and is superior in many ways to porcelain-covered steel. It is about one-third lighter in weight; its reflection factor is between 85 and 90 per cent compared to 80 per cent for white porcelain. The overall light efficiency is two per cent higher and the resistance to corrosion is better than enamel. Exposed to a 10 per cent solution of citric acid for 24 hours, or subjected to a temperature of 200°F for a week causes no discoloration. The new reflector is fully interchangeable with porcelain-enamelled reflectors, in fact, when a wood reflector unit is installed alongside a steel reflector unit the difference is hardly apparent to the eye.

1 1 1

NEW PLASTIC SUBSTITUTES FOR MANY STEEL USES

A new plastic composition claimed suitable for replacing steel or other metals in many uses, is reported by the Hercules Powder Company, Wilmington, Del., as being made from vegetable fibers and a resin from Southern pine trees. Lightweight but sturdy, the new composition can be used for many purposes such as structural members, pipe, wall panels, air conditioning ducts, corrugated sheets, etc. The Federal Electric Co., the report states, is making 3" plastic tubing to replace steel pipe in oil field exploration. Experimental work is under way on containers for oils and greases and for food shipments, and for the use of the new product in table tops, refrigerators, fluorescent lighting fixtures, automobile license plates and other products. To make the plastic, the resin-treated fiber is turned out in sheets on standard paper-making machinery, the sheets being hydraulically pressed together to make compositions which are hard, dense, and stiff, but not brittle.

1 1 1

BIG DROP IN NEW CONSTRUCTION

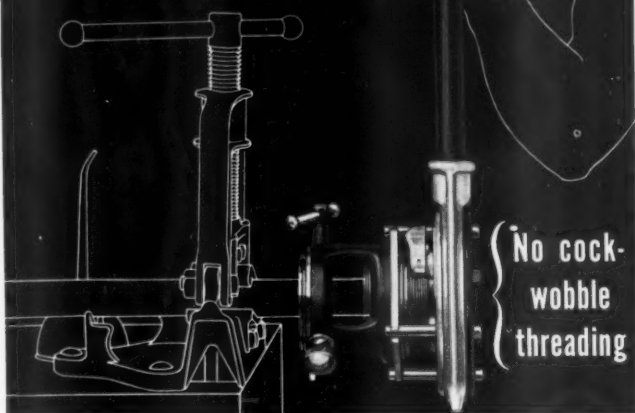
Employment on new construction during 1943 will drop to an average of a little more than a million workers, or slightly over half of the 1942 average, according to the U. S. Department of Labor. The war construction program reached its peak during August 1942 when 1,675,000 workers were required for all public construction activity. During the latter half of 1943 but 400,000 workers are expected to be on such projects, and the number on private construction is expected to drop to 180,000 persons.

When writing advertisers please mention Purchasing

Smooth Easy Threading

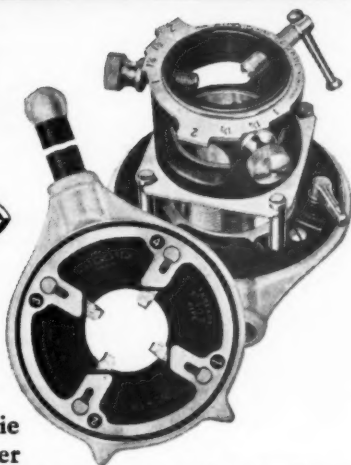
by *Direct Action*

—handle to head
to chasers



Floating Posts
Carry No Load
in this

RIDGID
Poster
Threader



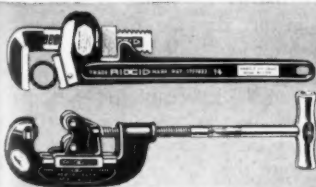
This RIDGID No. 1R die stock gives you faster easier threading of 1" to 2" pipe — its action is direct, in a straight line from handle to head to chasers. No chance for cocking or wobbling, you use less muscle, you cut smoother threads. Posts carry no load, merely taper the threads, and they're separately replaceable. Almost automatic foolproof workholders set to size instantly, speed the work — no bushings to fool with. Alloy or high-speed steel chaser dies. A rugged steel and malleable tool — yours at a popular price. Ask for a RIDGID No. 1R at your Supply House.

Buy RIDGID Pipe Tools at
Supply Houses Everywhere

RIDGID

★ PIPE TOOLS ★

*Fast-Working Tools for War...
and the Busy Peace that's Coming*



This stops waste of priceless time



RIDGID wrench housing is
Guaranteed
against break-
down and time-
out for repairs

It's no startling news to you that one tool that stays on the job is worth two that fall out for repairs, but it's a critically important fact these days. That RIDGID guarantee makes this wrench doubly valuable now. For the housing, crucial part of any pipe wrench, simply won't break or warp. Adjusting nut, out in the open, *always* spins easily to pipe size. Non-slip jaws that won't lock on pipe, handy pipe scale on hookjaw, powerful comfort-grip I-beam handle. *RIDGID does* save you time, effort — and the cost of "spares." Ask your Supply House for this favorite of millions of users.



THE RIDGE TOOL COMPANY
ELYRIA, OHIO, U.S.A.

When writing The Ridge Tool Company please mention Purchasing

Shop Educational Material

Visual and Textual Education for Increased Production Available in form of Books, Posters and Motion Picture Films

Manuals, charts, instruction sheets and motion pictures and stills designed to educate unskilled employees and impart higher efficiency practices to skilled employees, have been developed by numerous factors in American industry, looking to increased production and lower costs. The material has proved invaluable in both factories and educational institutions. Among the latest contributions along this line that Purchasing Agents may find

worth distributing to operating and production departments, and for other uses in employee instruction are the following:

Centrifugal Pumps

"Handbook for Wartime Care of Centrifugal Pumps" is the title of a new maintenance manual just released by the Allis-Chalmers Company, Milwaukee, Wis. Abundantly illustrated, the guide makes specific recommendations for put-

ting pump care on a wartime basis. It shows the how and why of pump construction, explains how a change in liquid can blitz a pump, explains easy ways to find leaks, explains common mistakes in packing stuffing boxes, how tight is "too tight" for a gland, how to protect pumps against cavitation, the vital role of water as a lubricant, how to diagnose pump ills, and other informative data.

Tool Breakage

To help combat the appalling increase in tool breakage which has accompanied the introduction of vast numbers of untrained and unskilled workers in war plants, the Genesee Tool Company, Fenton, Mich., has developed a series of educational posters designed to impress workers with the importance of proper tool handling and care. The basic theme of the posters is "There is Just So Much Tool Steel Available". The posters measure 2 1/3 ft. x 3 1/2 ft., and are printed in three colors. A new poster is furnished bi-monthly in order that a fresh appeal to workers may be continuously maintained.

Care of Portable Drills

A new handbook just published by The Black & Decker Mfg. Co., Towson, Md., is designed to show new workers, especially in war industry plants, the correct methods of using portable electric drills and obtaining greatest efficiency and life from these important war production tools. It covers such points as assembling the drill, the switch control, drill chucks and bits, how to use the drill, and gives several important points on maintenance and care. Name is "The Drill Use Book."

Electric Motors

A decalogue on motor maintenance in mimeograph form has been prepared by the Safety Research Institute, 420 Lexington Ave., New York. In addition to the ten rules on motor maintenance for highest efficiency, the instructions state that shops where motors are used should be protected with suitable types of approved fire extinguishers, vaporizing liquid and carbon dioxide being suitable for this purpose since their contents are non-conducting and non-corrosive.

New Series of Welding Films

"The Inside of Atomic Hydrogen Welding", is the title of a new film being developed by General Electric Company to supplement the industrial training film "The Inside of Arc Welding", which has been used in the training programs of more than 2000 war production plants and army and navy depots. It is expected the new film will be available March 15.

Die Casting Process

The New Jersey Zinc Company, New York, N. Y., has sponsored the development of what is termed a purely educational film on the die casting process, which is now available for release. This is a three-reel film which is said to give a well-rounded picture of the die casting process and the various alloys used. No attempt has been made to give the impression that the die casting process is

WHEN YOU DESIGN NEW PRODUCTS remember *Only* JOHNSON BRONZE makes every type of SLEEVE BEARING

New methods . . . new materials . . . new competition . . . three problems every manufacturer will have to face in the post war market.

How are you going to solve them in your product?

If your new design contains a motive unit . . . start with the bearings. They are vital to the performance . . . the operating life . . . the customer satisfaction. They can exert a big influence on your final design . . . the assembly method . . . the replacement problem.

Before you decide which bearing to use . . . consult with Johnson Bronze. Take advantage of our more than thirty years exclusive bearing experience. As we manufacture ALL types of SLEEVE BEARINGS, we base our recommendations on facts . . . free from all prejudice.

There's a Johnson Sales-Engineer as near as your phone. He will be glad to call at your office . . . to review your applications . . . to help you decide which type will best serve your purpose. Why not call him in . . . TODAY?



JOHNSON SLEEVE BEARING  **BRONZE HEADQUARTERS**
450 S. MILL STREET NEW CASTLE, PA.

When writing Johnson Bronze Co. please mention Purchasing

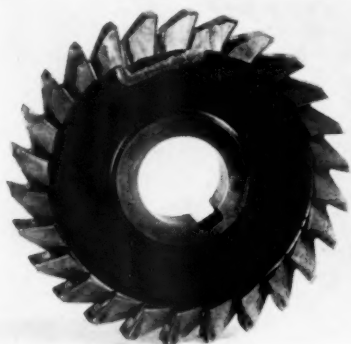
restricted to the use of zinc alloys, for the film is designed primarily as an educational rather than a commercial feature, for acquainting students with die casting.

Cemented Carbide Tools

A jumbo size wall poster, measuring 48" x 27", which graphically shows four simple ways to get longer life from cemented carbide tools, is being distributed by the Vascoloy-Ramet Corporation, North Chicago, Illinois. The poster is illustrated in red, white and blue, and has been developed in accordance with the War Production Board's request for simple and visual educational posters to be of assistance to workers in defense industries. The poster is free.

HOW TO SALVAGE TOOLS

By following instructions in "How to Salvage Tools" poster prepared by the Eutectic Welding Alloys Co., 40 Worth St., New York, for distribution to war



Repaired Milling Cutter—from Eutectic "Salvaging Tools" Chart

plants, tools costing up to \$180 and requiring 50 weeks delivery have been saved in a few minutes time at almost negligible cost. By text and illustration the poster outlines the procedure for "salvaging every tool vital to the war program,"—broken broaches, undersized flat broaches, drill shanks, milling cutters and slitting saws, form tools, etc.; shows how to weld extension reamers from standard reamers, and how to tip tools with tungsten carbide or stellite tips. Copies are available for the asking.

STRONGER NUTS AND BOLTS FOR HEAVY DUTY JOBS

Nuts and bolts in steam turbines and on other heavy duty jobs can be made 40% stronger by giving them broad shoulders and tapered bodies, according to Dr. Miklos Hetenyi of the Westinghouse Research Laboratories. By means of polarized light picture studies, Dr. Hetenyi found that a broad-shouldered nut, or a nut whose lower threads did not fit flush against a bolt, distributes its stresses at many different points. Ordinary nuts and bolts on the other hand, concentrate their stresses at a few places while other parts carry no load.

FOR CALCULATING CUTTING TOOL REQUIREMENTS

Simple slide rule named Motorule, for determining motor horsepower requirements for metal-cutting operations, is being distributed by the General Electric Company, Schenectady, N. Y. Slide shows metal constants for steel, cast iron and for non-ferrous metals and key rule indicators, which, by simple adjustment make possible motor determinations for lathe or planer, miller, and drills.

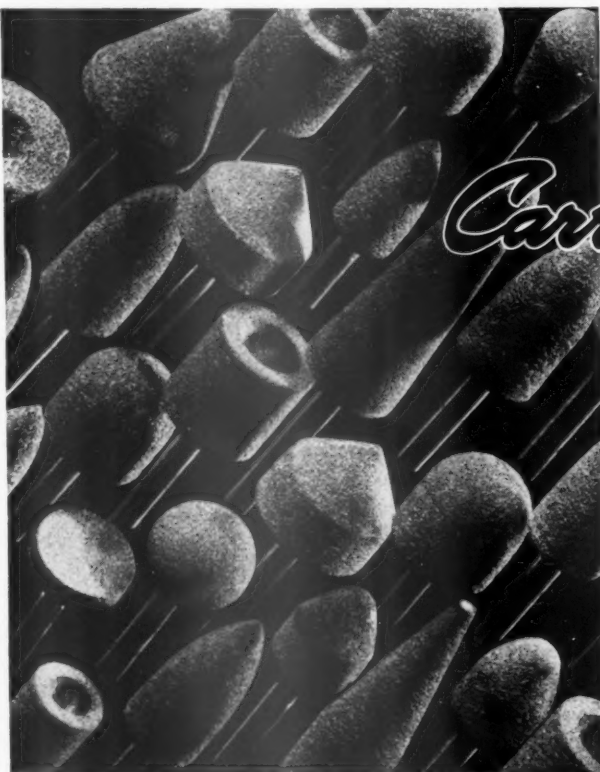
CONSERVING WOOL FELT

For manufacturers of wool-felt products and users of industrial felts, a four-page set of instructions has been prepared by

the Felt Association, Inc., 570 Lexington Ave., New York, explaining the most practical methods of reconditioning and cleaning to prolong the life of felts and keep them in serviceable condition.

MOTOR FINDER FOR SQUIRREL CAGE MOTORS

To help electric motor users determine their wartime motor needs quickly and at the same time conform to WPB recommendations, a "Motor Finder" slide rule covering standard type of squirrel-cage motors from 1/2 to 75 h.p., is being supplied free of charge by the Allis-Chalmers Co., Milwaukee, Wisconsin.



Carry On

**FINISH
THE
JOB
RIGHT**



CHICAGO MOUNTED WHEELS

Like setting the last rivet as the plane comes off the production line — burring, finishing and polishing to minute specifications mean the job is right.

Expert design, best quality materials, skilled workmanship — these are not enough without that all-important finish.

There is a "just right" Chicago Mounted Wheel for every polishing, grinding and burring operation, backed by the long-life guarantee that has made Chicago Mounted Wheels famous since their introduction 45 years ago.

PROMPT DELIVERIES — Count on us to help you break bottlenecks due to slow grinding wheel deliveries. We're working 24 hours a day, every day, and due to our central location, can make prompt shipment on all Mounted Points and Grinding Wheels 3" in diameter and under. With the approval and endorsement of the WPB, all our facilities are concentrated on these smaller sizes, enabling us to give the most potent service to the war program.

Send Catalog Coupon for your copy showing in actual colors and sizes the largest line of Mounted Wheels made.

CHICAGO WHEEL & MFG. CO.

America's Headquarters for Mounted Wheels
118 S. Aberdeen St., Chicago, Ill.

118-2

Please send copy of your new catalog.

Name

Address

When writing Chicago Wheel & Mfg. Co. please mention Purchasing

Plastics and Metals Non-Competitive

Both Types Have Inherent Advantages and Disadvantages

Plastics and metals will be partners rather than competitors after the war and their combination will enable engineers to build machinery and other structures once considered impossible. Both types of materials have inherent advantages and disadvantages that bar any complete replacement of one by the other, according to Dr. A. Allan Bates, manager of the Chemical and Metallurgical Department of the Westinghouse Research Laboratories. Actually, more metals will be used in the future because their partnership with plastics will make possible many

new products. In some instances, of course, the two will be rivals until one is proven superior. But more and more they will work together in vastly improved airplanes, automobiles, electric generators and motors and thousands of other industrial products.

Some partisans claim plastics and synthetic resins eventually will be used for everything except food. But there are innumerable articles that will be metal for years to come—automobile crankshafts and valves, electric transmission lines, blast furnaces and electric motor arma-

tures are examples of these. Plastics burn or melt at temperatures that have little effect on most metals. And plastics are not useful as conductors of electricity. So we may safely predict that they will not replace metals in the many jobs which require conductivity and stability at very high temperatures. No advent of plastics is more a promise than a threat to metallurgy although it may be a very serious threat to individual metallurgists, Dr. Bates states. Any who doubt that it is a promise, need only look at the automobile industry of peacetime. Mass production of cars would be impossible without the one-coat synthetic resins and lacquers that dry within a few minutes after they are sprayed on an automobile body. Before these synthetic resins were discovered, automobile bodies received a great many coats of paint and each coat took many hours to dry. The low cost era of plastics has not yet arrived and economic factors still give metals an advantage in many applications. Costs of various plastics are from about 20 cents to \$1 per pound while steel can be produced at a cost of several cents per pound, aluminum at 15 cents and copper at 12 cents.

Plastics are already formidable rivals of the family of metals because they have esthetic appeal, corrosion resistance, lightness with strength and other important engineering properties. Further, they can be made from such abundant raw materials as coal, air, water, wood and cotton. The economic advantage held by some metals may diminish in the not distant future as high-grade ores become more scarce and it is necessary to process progressively lower grades.

1 1 1

CORRUGATED SHIPPER SAVES 30% OF FREIGHT SPACE



Constructed in the form of an L-shape box, corrugated shipper for upholstered chairs developed by the Package Laboratory of The Hinde & Dauch Paper Co., Sandusky, O., makes it possible to nest packed units, with the result that it is possible to load 30% more chairs per truck or freight car. In addition to space saving, the new style box is claimed to afford much better protection, with the result that damage and breakage were decreased by 20%. This is said to be due to the fact that the box is 20% lighter than that formerly used, and hence is possible easier to handle. Furthermore elimination of inner bracing has speeded up packing operations. The cost of the new type box is 20% less than that of box formerly used.



And warplant draftsmen need the
best tracing cloth money can buy . .

ARKWRIGHT

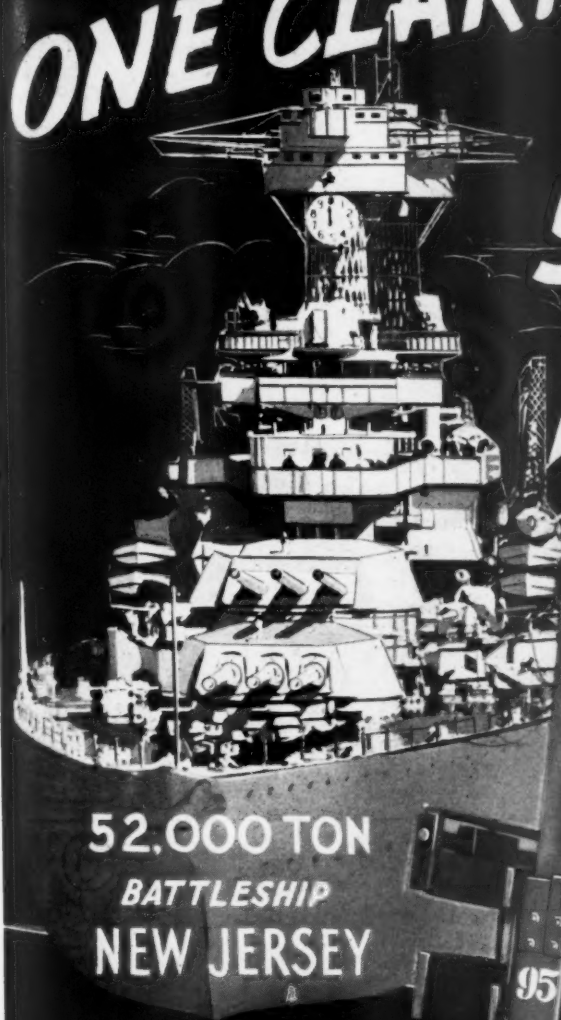


Only the best quality tracing cloth is smooth enough to take erasures without smudging . . . strong enough to stand up to the corrections constantly being made today. Only the best quality tracing cloth is transparent enough to insure the sharpness of transfer that war drawings must have to be read easily, quickly, and accurately. That's why it's important, during these critical years, to use the best tracing cloth money can buy . . . ARKWRIGHT. Arkwright Finishing Company, Providence, Rhode Island.

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CLOTHS
AMERICA'S STANDARD FOR OVER 20 YEARS

When writing Arkwright Finishing Company please mention Purchasing

ONE CLARK FORK TRUCK CARRIES 52,000 TONS IN 866 HOURS



Equivalent to the weight of the largest battleship afloat—the New Jersey.

60 tons per hour—that's moving material.

On the fighting fronts of the world and in the war-producing plants at home—

Clark Fork Trucks keep material moving.

Gas or Battery Powered

Built in 1,000 to 7,000 lbs. capacities.

Clark engineers will solve your material problems.

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CLARK TRUCTRACTOR

DIVISION OF CLARK EQUIPMENT COMPANY

BATTLE CREEK, MICHIGAN, U.S.A.



When writing Clark Equipment Company please mention Purchasing

HARPER STOCKS the UNUSUAL AND MAKES THE "Super Unusual"

Think of 4320 stock items of fastenings . . . including almost every conceivable type of bolt, nut, screw, washer and rivet in the non-ferrous and stainless alloys. Such a stock is one of Harper's contributions to a nation at war.

If the fastening you want isn't in this stock, Harper can make it promptly (priorities permitting) on extensive, modern, high speed machinery . . . from stocks of metals in basic forms. Submit your specifications.

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. . . and reference book. 80 pages—4 colors — 193 illustrations — numerous tables and other data. Free when requested on a company letterhead.

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SHIPPING SECURITY!**

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Sealing Tape**

WILL STICK AND STAY STUCK

Why not use the best—especially when it costs no more than ordinary brands? Orange Core superiority is good insurance against shipping production delays and bad deliveries. Its stick-on speed and stay-put stamina have long made it America's Most Popular Brand. Give your shipments the security they need and deserve by sealing them safely with Orange Core. Ask your paper merchant to supply you today.

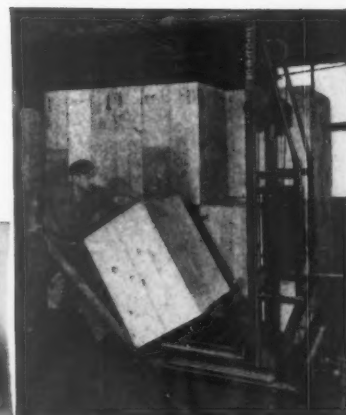
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REVOLVATOR

PORTABLE ELEVATORS



Zee-Bar Uprights form straight, smooth, parallel tracks for platform guide wheels. More strength and rigidity, less weight, 15% less friction.



TO HELP BEAT HITLER & CO.

You can step-up your war output and release men for the front by using REVOLVATORS for lifting, piling and stacking your raw materials and finished products.

Use them in conjunction with our RED GIANT LIFTRUCKS and make every second count; every foot of storage space utilized.

TWO WEEK DELIVERY or better on standard Models.

Write us the nature and weight of materials and height to be lifted and let us quote you. Send for Bulletin PUR.

REVOLVATOR Co.

DESIGNERS AND MANUFACTURERS OF MATERIAL HANDLING EQUIPMENT

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Full Time on the War Effort

As the largest jobbing producer of non-ferrous castings in the United States, the Howard Foundry Company is naturally on a full war time basis.

The three Howard foundries have stepped up their capacity to meet war's needs for magnesium, aluminum and copper base castings. Howard's answer to the ever-growing call for magnesium castings was the construction of a new magnesium foundry with a capacity of over 500,000 pounds of castings per month. "Plenty, and On Time!" is a Howard slogan.

Howard nonferrous castings are going to every front; in planes, guns, tanks, ships, ammunition

and military vehicles. They are playing their part in giving the United Nations better fighting equipment. Too, they are being widely used in essential machinery employed in the war effort at home.

War time applications of nonferrous castings, especially magnesium, are disclosing important peace time uses. Now is not too early to investigate the possible uses of magnesium in your post-war products. An informative booklet, "Nonferrous Castings and Their Uses," is yours for the asking.



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HOWARD

ALUMINUM · BRASS · BRONZE · MAGNESIUM



CASTINGS

Red Lead as Protective Coating

Dark Tinted Coats Show Better Weathering Qualities

The proper selection of primers and intermediate coatings is of first importance in metal protection paint jobs, according to S. A. Williams, painting contractor of Baltimore who specializes in the painting of industrial buildings. He states that the weathering qualities of such coatings is always an important consideration because if final finish coatings are neglected even to the point of breaking up, properly primed and second coated metal will not suffer immediate corrosion and in many cases will remain dust free for years longer.

Mr. Williams conducted a series of weathering tests with some 70 different priming and finish coat paints in the heart of Baltimore's chemical manufacturing and industrial district, the results of which were described in "Dutch Boy Quarterly." The tests were conducted on a large number of steel test panels, all of which were accorded similar treatment in the matter of sandblast cleansing and application of protective coatings under favorable weather conditions.

Of a series of five panels four were primed with paste red lead thinned to

brushing consistence with linseed oil and volatile thinner, and one with quick drying red lead. The five were then given two coats of a standard finish coat paint.

Another set of five panels was both primed and second-coated with paste red lead and linseed oil. The paint on two of the panels was tinted to a chocolate brown with lampblack. One coat of standard finish paint was then applied to half of each panel.

After weathering for more than three years, it was found that with one exception the finish coats on the ten red-lead panels had been worn away completely as a result of weather action. The red-lead undercoats, however, are said to have remained in excellent condition, and there was no evidence of rust on any of the panels.

Mr. Williams points out that red lead undercoats exposed directly to weather throughout the test period stood up well, and especially well where the second or outer coating was tinted to dark chocolate brown with lampblack in oil.

1 1 1

JOSHUA HENDY ACQUIRES POMONA PUMP AND CROCKER-WHEELER

The Joshua Hendy Iron Works, engineers, machinery manufacturers and founders, Sunnyvale, Calif., announces the acquisition of the Pomona Pump Com-



A. J. M. Baker, general manager of the Crocker-Wheeler Electric Mfg. Co. division, Charles E. Moore, president of Joshua Hendy Iron Works, and Geo. A. McKenna, general manager of the Pomona-Westco Pump Co. division.

pany, of Pomona, Calif. and St. Louis, Mo., along with its subsidiary, the Westco Pump Division, Pomona; and the 55-year old Crocker-Wheeler Electric Manufacturing Company of Ampere, New Jersey. A new twenty-five acre plant at Torrance, Calif., has been acquired and turned over to the Pomona Pump Division of the Hendy Company. Plans are underway for expansion of the Crocker-Wheeler Plant.

1 1 1

REINFORCED CONCRETE EMERGENCY SPECIFICATIONS

National emergency specifications for the design of reinforced concrete buildings became effective January 1, 1943, according to the War Production Board in an amendment to a directive, issued October 5, which placed the deadline for compliance on December 5 (WPB-1972). Emergency specifications booklets are available at WPB field offices.



DIAGRAPH-BRADLEY STENCIL CUTTING MACHINES

Features: Exclusive punch guide assures perfect alignment; Removable interchangeable letters; Easy-to-read dial; Ball-bearing construction; Visible feed; Fewer working parts; Smooth-baked finish; Cuts stencils any length.

ON DIAGRAPH-BRADLEY STENCIL CUTTERS

★ ★ To Firms With High Priority Ratings ... Yes, we can make shipments of Diagraph-Bradley Stencil Cutting Machines **RIGHT NOW** if you need them to meet government regulations on marking war shipments.

Letter sizes: $\frac{1}{2}$ "— $\frac{3}{4}$ "— $\frac{7}{8}$ "— $1\frac{1}{4}$ "— $1\frac{1}{2}$ "— $1\frac{3}{4}$ ". We are only manufacturer making stencil machines for letters larger than one inch.

Complete Shipping Room Supplies

Diagraph-Bradley non-settling, non-clogging Stencil Ink, Stencil Board, Fountain Brushes, Fountain Markers.

Distributors in principal cities. See phone book or write Diagraph-Bradley Stencil Machine Corporation, 3750 Forest Park Boulevard, St. Louis, Mo.

DIAGRAPH-BRADLEY

STENCIL MACHINES

Made By World's Oldest and Largest Manufacturer of Stencil Cutting Equipment

When writing Diagraph-Bradley Stencil Machine Corporation please mention Purchasing

IF YOU ARE RUNNING A WAR FACTORY

*please accept this
personal invitation*

IF you are engaged in any kind of war production you are invited to make use of a free service which has already stepped up production in hundreds of factories—large and small.

Here is how it works. You simply telephone your nearest G-E lamp office, or your Electric Service Company, Electrical Jobber or Contractor. Say: "We want to do all we can to speed production. Will you have a lighting man call and see if he can help us?" The lighting man will carefully inspect your lighting, look for bottle-necks caused by glare or gloom or shadows. He'll show you how to correct those troubles—with the least possible use of critical materials.

You can't *lose* by accepting this invitation. And you may *gain* both in production and in employee morale. So won't you phone today?

TYPICAL LIGHTING TROUBLES WHICH HOLD BACK PRODUCTION

- 1. GLARE**—from bare bulbs or wrongly placed fixtures. You may not realize how this is holding back your production.
- 2. SHADOWS**—sometimes a worker's own shadow slows up his work. Moving a light fixture often removes this hazard.
- 3. GLOOM**—dirt and grease on bulbs and reflectors can cut out *half* your light—and slow down production accordingly. Soap and water work wonders.



**For wartime lighting help . . . Phone one of these G-E lamp numbers
or your Electric Service Company or G-E lamp supplier**

ATLANTA WAInut 9767
Red Rock Bldg.
BOSTON HA ncock 1680
United Shoe Machinery Bldg.
BUFFALO LAfayette 7194
Genesee Bldg.

CHICAGO HArrison 5430
842 S. Canal St.
CLEVELAND CHerry 1010
Williamson Bldg.
DALLAS LD 224
General Electric Bldg.
DENVER MAIn 6141
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DETROIT CHerry 6910
Book Tower

KANSAS CITY VICTor 7671
2100 Wyandotte St.
LOS ANGELES MIchigan 8851
Edison Bldg.
MINNEAPOLIS GRanville 7286
Northwestern Terminal
NEW YORK WICKersham 2-6300
570 Lexington Ave.

OAKLAND HIgate 7340
1614 Campbell St.
PHILADELPHIA KINsley 3336
Mitten Bldg.
PITTSBURGH FAirfax 7911
601 E. General Robinson St.
PORTLAND BEacon 2101
Oregon Transfer Bldg.
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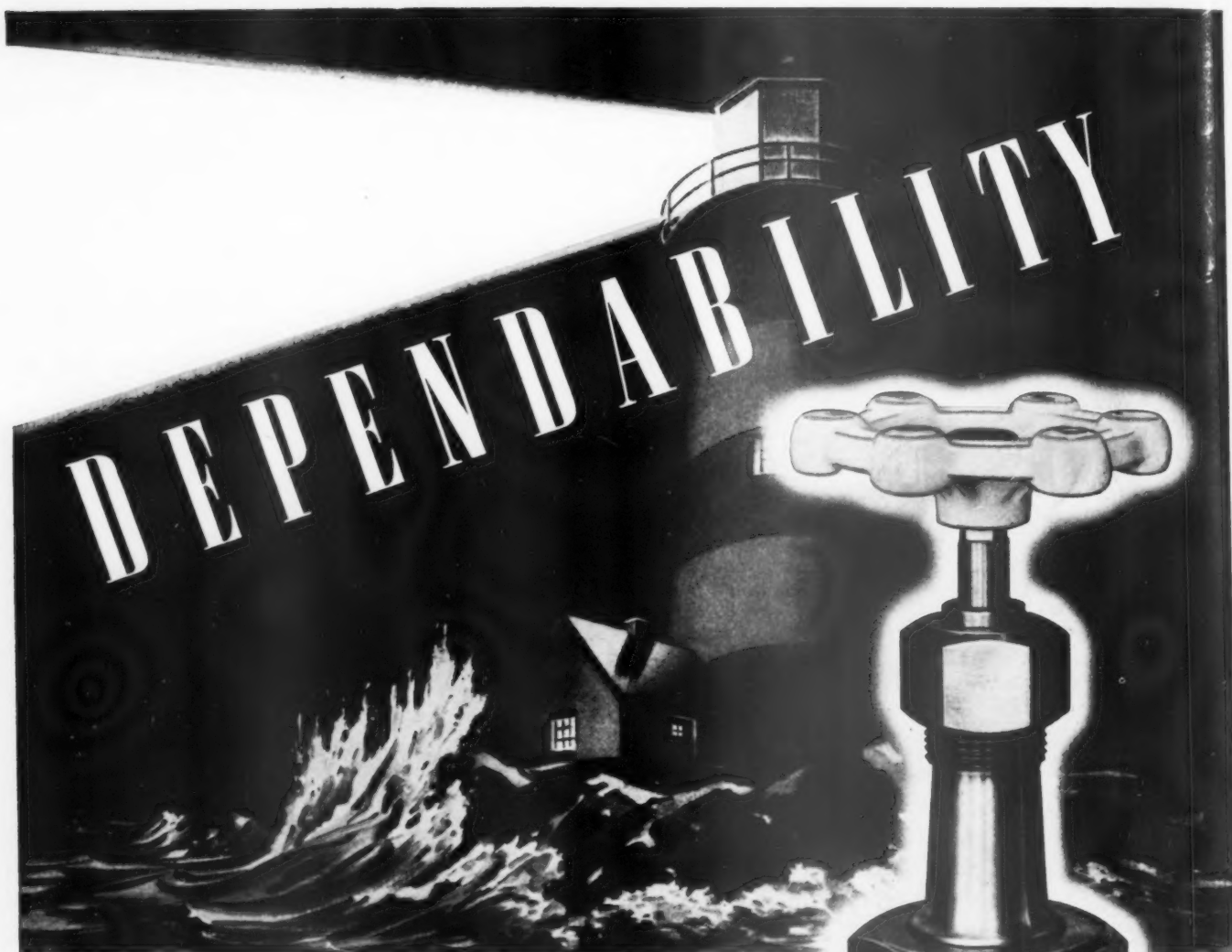
See your phone book for G-E Lamp offices in other principal cities



G-E MAZDA LAMPS

GENERAL ELECTRIC

When writing General Electric Company please mention Purchasing



In every branch of Industry, Powell Valves are famous for Dependability

It's not by accident that Powell Valves have an outstanding reputation for dependable performance in every branch of American Industry.

There's a lot of truth in the trite old saying that "practice makes perfect." For nearly a century Powell has concentrated on making valves—and *nothing but valves*. And through the years Powell Engineering has always been on the job—meeting and satisfying every new demand for valve design and construction.

The Wm. Powell Company

Dependable Valves Since 1846

Cincinnati, Ohio



Fig. 1708—Bronze Globe Valve for 200 pounds W. P. Has renewable seat and regrindable, renewable hard bronze semi-cone plug-type disc. A top-ranking valve for severe throttling service. Easily repaired, if necessary; can be repacked under pressure when wide open. Sizes, $\frac{1}{4}$ " to 3", inclusive.

It is one of a complete line of Globe, Angle, Check, Gate and other types of valves, in Bronze, Iron, Steel, Pure Metals and Special Alloys, designed and made by Powell to meet the demands of American Industry for dependable flow control equipment.

POWELL VALVES

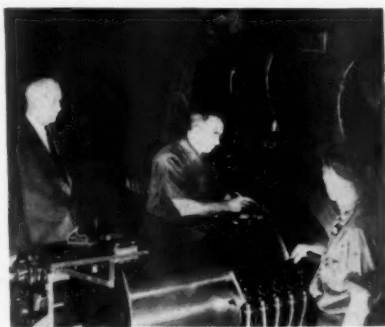
When writing The Wm. Powell Company please mention Purchasing

NOW UNITED STATES STEEL SUPPLY COMPANY

The name of Scully Steel Products Company, United States Steel Corporation subsidiary, was changed to United States Steel Supply Company, January 1. E. E. Aldous, President, announces that the new name does not involve any change in the management or the business in which Scully Steel Products Company has been engaged. The principal reason for the change is to identify the Supply Company more closely with other subsidiaries of United States Steel Corporation. General headquarters of United States Steel Supply Company are located at Chicago.

TWO OLD MACHINES MAKE ONE NEW ONE

That necessity is the mother of invention is ably demonstrated by the achievement of Tom Wry, one of General Electric's veteran planning engineers, in perfecting a machine to spline keyways in 35-ton reduction gears at one of the company's New England plants, out of an old



Machine for splining Keyways at G.E. Plant Made from Two Old Ones

hydraulic horizontal broach that had been idle for some years and some steel pedestals resurrected from a scrapped gear hobber. The splining job was previously done with a vertical slotting machine which was not giving required accuracies. The improvised machine not only meets the required accuracies but is said to be easier to operate than its predecessors. This is a fine example of American ingenuity in making practical use of the salvage of old equipment, saving time and the purchase of new equipment, and providing a better functioning machine.

CASTOR OIL SHORTAGE

Due to the limited amount of shipping space available from South America, and the fact that more important commodities have a higher shipping priority than castor beans, there is a severe shortage of castor oil, which is used in protective coatings, textile processing, cosmetics, hydraulic fluids and for many other purposes. The use of castor oil has been limited through specific allocation to approximately 60% of the total requirements, covering important military needs and the most essential civilian uses for which no substitute has yet been made available. This year's shipping program, if successfully completed, is expected to provide suffi-

cient castor beans for the production of 60 percent of the oil normally consumed in a year.

INSTITUTE PROCEEDING TO REVISE SOFT COAL PRICES

The Bituminous Coal Division has instituted a proceeding for making such revisions in minimum soft coal prices as may be found necessary under provisions of the Bituminous Coal Act, according to announcement by Secretary of the Interior, Harold L. Ickes. The proceeding was ordered by Dan H. Wheeler, Director of the Bituminous Coal Division, on the basis of a joint petition filed by two Producers' Boards in the Southern Ap-

palachian field. The proceeding calls for a public hearing starting February 24, at Washington, D. C. The Bituminous Coal Act provides that the Bituminous Coal Consumers' Counsel, who participated in the preliminary conferences, appear in the interest of the consuming public in the proceedings before the Division.

PURCHASING COURSE AT COLUMBIA UNIVERSITY

The Columbia University School of Business, New York City, is offering a course in industrial purchasing for the Spring Term of 1943. Stuart F. Heinritz, Editor of PURCHASING, has been appointed Lecturer in Marketing and will serve as instructor.


2

FOUNDRIES

Ready to meet your

CASTING

NEEDS



• Transmission gear cover—a Forest City casting used by a large automotive manufacturer.

FOREST CITY has two efficient, modern foundries—both equipped to produce precision castings on schedule and as specified.

We can supply machine tool castings, such as gear boxes, drill press heads, gear box covers and housings in gray iron, semi-steel or high test semi-steel in sizes from a ½ ounce to a half ton.

Send us your inquiries or ask for a representative to discuss your casting requirements.

Gray Iron,
Semi-Steel
and High Test
Semi-Steel
Castings

PHONE PROSPECT 5040

THE FOREST CITY FOUNDRIES CO.

2500 WEST 27th ST. • CLEVELAND, OHIO

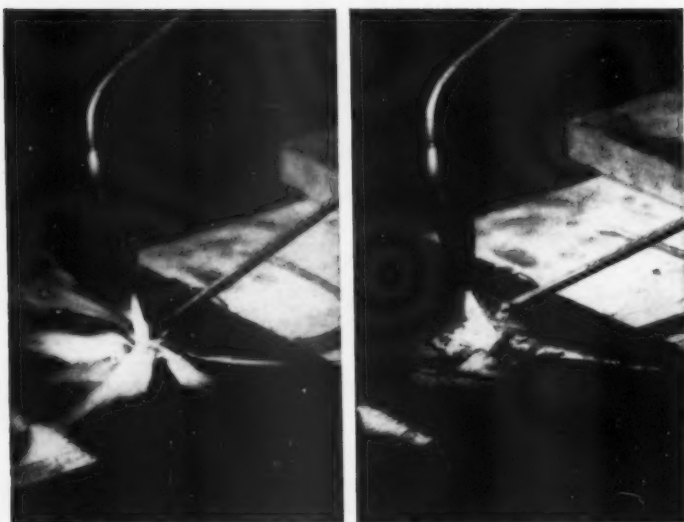
When writing The Forest City Foundries Co. please mention Purchasing



Another American Advance in Scientific Glare Control

**NOVIWELD-
DIDYMIUM
GLASS**

... GREATER VISION FOR FLAME-WELDERS



Unretouched photographs taken on Eastman Super Panchro-Press film.

HERE'S WHAT THE WELDER SEES

Left: Photograph taken through Noviweld lens—the "sodium flare" obscures the rod and bead. *Right:* Photograph taken through Noviweld-Didymium lens—note how the "sodium flare" has been screened out, revealing the entire working area in sharp relief.

Noviweld-Didymium lenses, developed by American Optical Company, mark a major advance in the science of glare control. In all types of flame-welding, these new lenses provide a clearer view of the working area by cutting down the vision-obstructing rays of the sodium flare. Welding goggles equipped with Noviweld-Didymium lenses enable a flame-welder to look right through the cloudy yellow flame of burning sodium vapors, and thus see the rod and the molten area more sharply. This clearer vision increases his efficiency in every phase of the welding operation. He can turn out more work and better work, with complete eye protection and comfort.

The first welding lens to possess these properties, combined with adequate protection, Noviweld-Didymium is manufactured under strict laboratory control and held to the same high standards of uniformity as Noviweld and Calobar. Noviweld-Didymium lenses are available in the standard shade numbers 4, 5, and 6. For convincing demonstration, call in your American Optical Company Safety Representative.

American  Optical

COMPANY

SOUTHBRIDGE, MASSACHUSETTS

When writing American Optical Company please mention Purchasing

PERSONALITIES

in the NEWS

Russel E. King has been promoted to the position of General Purchasing Agent, Lackawanna Railroad, New York, vice Charles C. Hubbell, who has retired after 47 years with the railroad. Heretofore Mr. King has been assistant to the General Purchasing Agent.

Earl M. Moffatt, has been appointed as assistant to the president of the Lackawanna Railroad, in which capacity he will have Supervision of Purchasing, the stores and dining car departments.

C. D. Bucher has been appointed Director of Purchases for The Dayton Rubber



C. D. Bucher, Director of Purchases, The Dayton Rubber Manufacturing Co.

Manufacturing Company, Dayton, Ohio, succeeding J. C. Cunningham, who resigned. Mr. Bucher is a past president of the Akron Branch of the National Purchasing Agents Association. Prior to joining the Dayton Company, Mr. Bucher served as Purchasing Agent for the Mohawk Rubber company, Akron, and was buyer of engineering materials for the B. F. Goodrich Company.

R. C. Wietersen has been appointed Director of Purchases, The Buda Company, Harvey, Illinois. For the past two years he was Director of Purchases for the National Supply Co., Springfield, O., and for four years prior to that he was with the Hercules Motors of Canton, O., as Director of Purchases. Previously he was with the Studebaker Corporation for 18 years, ten of which were spent in the capacity of Assistant Purchasing Agent.

Francis X. Lang has been appointed by Mayor Tobin of Boston, Mass., to the position of City Purchasing Agent and head of the Supply Department. Mr. Lang had previously been serving in the dual capacity of Budget Commissioner

and Acting Purchasing Agent. He will devote his entire time to the purchasing and supply function.

F. J. McCall has been named City Purchasing Agent at Bremerton, Wash., a newly created post established under the city charter adopted at a special election held last October. L. Frank Wilkes, who

has had extensive purchasing experience in the railroad field, has been appointed as assistant to Mr. McCall.

Carl R. Gleason, formerly with the Northland Transportation Co., has been appointed Purchasing Agent of the Imperial Candy Co., Seattle, succeeding E. E. Beckett, who resigned to become traffic manager for the Kenworth Motor Truck Co.

Addison C. Smith has been appointed Purchasing Agent for the Anacortes Shipways, Inc., Seattle. Mr. Smith has served as Purchasing Agent for several large construction projects in the Northwest, including Cantonment Camp Adair,

AMPCO CASE HISTORIES

times more production

with AMPCO dies

Wooden dominoes and building blocks — familiar and homely games of childhood — must be economically made for mass consumption. Once steel dies formed 200,000 blocks before the dies had to be replaced. Then dies of "Ampco" bronze were tested and production leaped to 1,000,000 before replacements. Ampco Metal lasted five times longer.

While Ampco dies undoubtedly cost more than the original steel, their longer life made the final cost very low. Ampco bronzes give full value — become a sound investment. . . Investigate Ampco Metal yourself. Ask for Catalogue 22.

AMPCO METAL, INC.

DEPARTMENT PA-2

MILWAUKEE, WISCONSIN

AMPCO METAL

THE METAL WITHOUT AN EQUAL

When writing Ampco Metal, Inc. please mention Purchasing

Oregon, the Reynolds Metals Company aluminum plant at Longview, and the Boeing Aircraft Company at Seattle.

Wyman S. Randall, Purchasing Agent of Rust Craft Publishers, Inc., Boston, has been named vice chairman of the Greeting Card Industry Branch, Graphic Arts Division of the United War Fund. Mr. Randall is a past president of the New England Association.

Henri A. Bales has been appointed Deputy Purchasing Officer of the District of Columbia, succeeding J. T. Kennedy, who becomes superintendent of weights, measures and markets. Joseph Marcelino, who has been associated with the

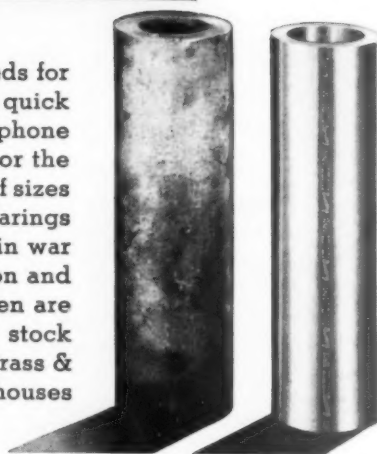
District purchasing department for the past ten years, succeeds to the post formerly held by Mr. Bales as chief of priorities and market analysis.

Col. Paul W. Johnston has been appointed Chairman of the general purchasing board of the Army Service of Supply in Australia. In civilian life, Col. Johnston is Assistant Vice President of the Operating Department, Erie Railroad.

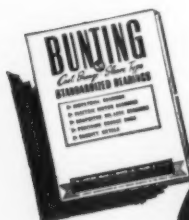
Thomas H. Judge, Purchasing Agent of the Bank of America, San Francisco, was recently inducted into the bank's Quarter Century Club, and presented with a diamond studded gold service pin by A. P. Giannini, chairman of the board.



● The short cut to supplying your needs for Bronze Bearings, Bushings and Bars is a quick glance at the Bunting Catalog and a telephone order to your local Bunting Wholesaler or the nearest Bunting Warehouse. Hundreds of sizes of completely machined and finished bearings in stock for practically all applications in war industries machinery for both production and maintenance. Special requirements often are readily and economically made from stock items. Write for catalog. The Bunting Brass & Bronze Company, Toledo, Ohio. Warehouses in All Principal Cities.



● You save about 50% of set-up and machining time and 25% of metal when you buy Bunting factory finished tubular and solid Bearing Bronze Bars.



Bunting

BRONZE BUSHINGS • BEARINGS • PRECISION BRONZE BARS

When writing The Bunting Brass & Bronze Co. please mention Purchasing

Willis T. Callaway, City Purchasing Agent, Warwick, R. I., has been appointed Government Mileage Administrator for that City, by the mayor. Walter Willoughby was named his deputy, and Frederick L. Johnson, clerk.

G. O. Wright of Idaho Falls, Idaho, has been appointed state Purchasing Agent succeeding Ed. Brennan of Pocatello.

Arthur L. Burroughs, Cranbury, N. J., was recently sworn in as Purchasing Agent for Middlesex County, for a term of three years.

Charles J. Otis, has been placed in complete charge of purchases for the Ward Leonard Electric Company, Mount Vernon, N. Y.

Alvin A. Borgading, has been appointed Purchasing Agent for the American Car & Foundry Company, being promoted from the position of Assistant to the Purchasing Agent. Herbert Streader was named Assistant Purchasing Agent, and will be in charge of the Material Control Division set up under the WPB's CMP.

F. P. Boler has been appointed Manager of Purchasing, International Harvester Company of Australia, Pty. Ltd., Melbourne, Australia. He formerly was in charge of purchasing.

C. V. Nelson has been appointed Director of Purchasing, General Mills, Minneapolis, Minn., vice Sewall D. Andrews, Jr., who is now associated with the Control Division Headquarters of the Services of Supply of the United States Army.

H. P. McQuilkin, Assistant Purchasing Agent of the Baltimore & Ohio Railroad, has been given a leave of absence to assist the Army in the operation of its military railway units.

Charles Ethington, Clerk and Purchasing Agent of the Enid, Oklahoma, School Board, has resigned to accept a civil service appointment as industrial specialist in the School and College Section, Governmental Division, of the War Production Board. Mr. Ethington's record at Enid, in developing the business procedures of the School Board, has been progressive and resultful. Improvement in building maintenance and a monthly inspection program have brought about a reduction in insurance rates by more than 50%. Expenditures for janitor supplies have been reduced by 40%, while servicing more than one-third additional floor space. A file of more than 500 specifications has been formulated, covering items in regular use. Mr. Ethington helped to organize the Oklahoma Association of Public School Business Officials two years ago, and served as its first president, subsequently being reelected for a second term.

John W. Evers, Jr., secretary of the Commonwealth Edison Co., Chicago, has been appointed vice president by the board of directors, in which capacity he will have

(Continued on page 154)

WE KNOW YOU'LL SEE THE JOB THROUGH, MR. JEFFERS

Incorporated 1850
Pennsylvania Salt Manufacturing Co.,
Manufacturing Chemists.
Widener Building
Philadelphia

Leonard T. Beale
President

January 16, 1943

William M. Jeffers, Esq.,
Coordinator for Rubber,
War Production Board,
Washington, D. C.

Dear Mr. Jeffers:

You have taken over one of the country's most urgent and important problems with estimable competence and enterprise.

Conserving and controlling rubber for essential military and civilian needs is a difficult, many-sided task. But your ability to organize and coordinate has given the nation confidence that you will find the answer and see the job through.

At present, the shortage of new rubber and synthetics makes the reclamation of used rubber one of your chief concerns. Caustic soda plays an important part in the reclamation process and caustic soda is one of our principal products.

I was interested, therefore, on seeing recent production reports, to note that large quantities of the caustic soda we manufacture are destined for use in rubber reprocessing operations. It is gratifying, indeed, to know that we can contribute -- even thus indirectly -- toward the solution of a pressing emergency problem.

Yours for Victory,

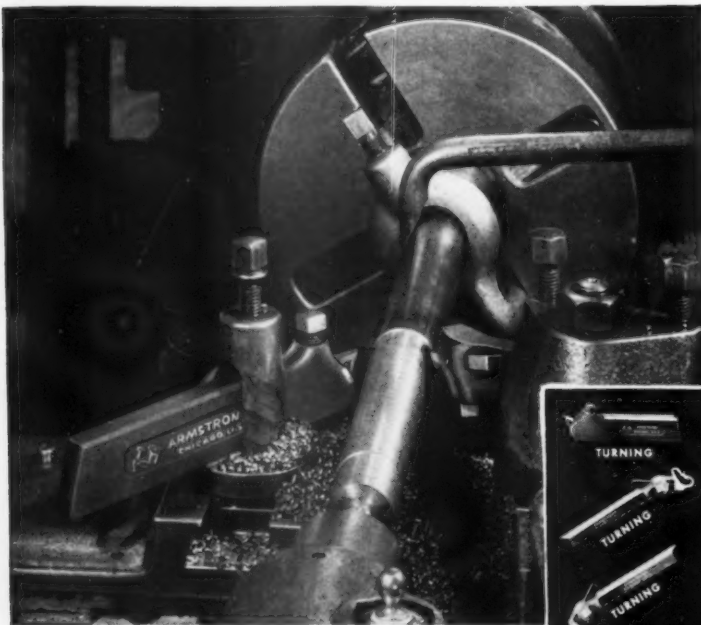
Leonard T. Beale

OFFICIAL O.W.I. PHOTO



PENN SALT
Chemicals

ARMSTRONG



First come.... ARMSTRONG TOOL HOLDERS

For any increased production your first need is for ARMSTRONG TOOL HOLDERS—tool holders to make dies, jigs and fixtures for the very tools of production are themselves products of the tool room. Under present "step-up" conditions, hours and days saved in the tool room are hours and days saved for the entire plant and there is one certain and easy way to step up tool room output. That is to use the correct ARMSTRONG TOOL HOLDER for each operation on lathes, planers, slotters and shapers. With the right tool holder you can safely step-up speed, feeds and output to the very maximum for ARMSTRONG TOOL HOLDERS will stand up to any speed or feed machine tools can pull.

The "Armstrong System" comprises over 100 sizes and shapes, all permanent tools that reduce tooling-up to the selection of a cutter and tightening of a set screw; that: "Save: All Forging, 70% Grinding and 90% High Speed Steel" and each does the work of a complete set of forged tools. ARMSTRONG TOOL HOLDERS are always available; are stocked by supply houses everywhere.

Write for Catalog.

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"

303 N. Francisco Ave. Chicago, U. S. A.
Eastern Warehouse & Sales: 199 Lafayette St., New York



(Continued from page 152)

charge of the Purchasing and Stores and transportation departments, and will continue as secretary. He succeeds John F. Gilchrist who has retired from that office to become chairman of the board of directors of the Chicago & Illinois Midland Ry. Co., which is owned by Commonwealth Edison.

W. H. Mark Hanna has been appointed to the staff of the Michigan State Purchasing Director as standards and testing executive, in charge of writing specifications. Mr. Hanna was associated with the State's business offices as an efficiency engineer from 1935 to 1941, and achieved the highest ranking in the civil service examinations for the newly created post to which he has now been named.

Joseph W. Nicholson, City Purchasing Agent at Milwaukee, will address the annual convention of the California State, County and Municipal Purchasing Agents Assn. at Los Angeles, February 24-25.

George Kende, Purchasing Agent of Amintas, Ltd., New York City, recently addressed the defense training course on production supervision at New York University on the topic, "Wartime Regulations in Purchasing."

Ernest Koster, Director of Purchases, Ranger Aircraft Engines, Division of Fairchild Engine & Airplane Corporation, Farmingdale, New York, for the past four years, has resigned from that organization.

E. E. Rumble has been promoted to the position of Purchasing Agent, Container Supplies Department, Merck & Company, Rahway, N. J.

Theodore M. Johnson has resigned as Supervisor of Purchases for New York University after twenty-one years in that office, which he undertook while still a student at the University, working for his degree of Bachelor of Commercial Science. He leaves to accept a position as Vice President of E. H. Sargent & Co., Chicago, manufacturers and distributors of laboratory supplies. Mr. Johnson has been a consistently active and effective worker for the cause of purchasing. A member of the New York Association for nearly twenty years, he has served as a member of the Executive Committee and as chairman of several other committees. He was chairman of the Educational and Institutional Buyers Group of the N.A.P.A. for several years, long time secretary of the Educational Buyers Association and manager of the cooperative buying service. In addition to this heavy schedule of regular duties, he found time to conduct a course in "Purchasing and Storeskeeping" at N. Y. U. for six years, and to serve as instructor in a similar course at Rutgers University. R. B. Jenkins, who has been associated with Mr. Johnson in the University purchasing department and in the Educational Buyers Association work, succeeds to the position of Supervisor of Purchases.



METAL DUPLICATING Without Dies



Users of Di-Acro Precision Machines—Shears, Brakes, Benders—are constantly showing us new time-saving, cost-cutting applications, in experimental work, for making small quantities of parts—or even production runs. They save Man Hours and Critical Materials. Die-Less Duplicating does many things dies cannot do. Photo (courtesy Minneapolis-Honeywell) shows Di-Acro Shear No. 1, which squares up stampings, cuts strips, makes slits or notches. All work accurate to .001".

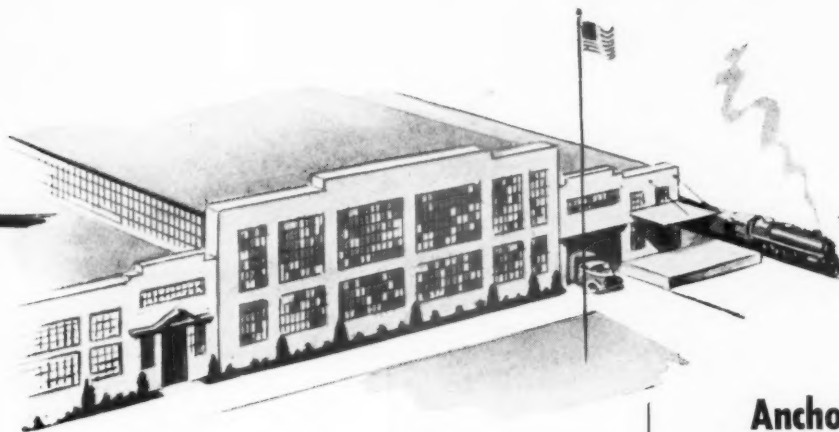
Get New Catalog
It shows Di-Acro Shears, Brakes, Benders illustrates many parts which can be made with this creative, flexible system of "Metal Duplicating Without Dies."

O'NEIL - IRWIN MFG. CO.
305—8th Ave. S., Minneapolis, Minn.



When writing advertisers please mention Purchasing

WANTED: War Sub-Contracts



**Anchor Post Fence Company offers
Prime and Sub-Contractors Facilities of Its Strategically Located
Baltimore and San Francisco Plants**

WHETHER you require a single operation—or complete manufacture and assembly—Anchor wants to help on your war contract. We have the plants, the men, the machines, the skill and experience to do a job for you.

What kind of job? Arc welding, spot welding, structural steel fabrication, hot galvanizing, bonderizing, sheet metal work, stampings. As Prime and Sub-Contractor, Anchor has been engaged for over two years on war work, ranging from small machined parts to large assemblies. Before the war, Anchor was a leader in the air

conditioning, oil burner, and fencing industries. Affiliated sub-contractors are organized to produce, under Anchor supervision, any part of war contracts our own plants cannot handle.

The main Anchor plant is located in the industrial center of Baltimore, astride rail lines and tide-water shipping lanes, close to materials and labor. 100,000 feet of floor space, machines listed at right, and an organization specially trained in war work stand ready to serve you. The San Francisco plant also offers excellent sub-contracting facilities.

Send for Free Brochure. Whatever your problem, get the benefit of Anchor's broad experience before you act. Send for free Brochure, "Anchor's Sub-Contract Facilities"—a complete, detailed picture of Anchor men, machines, and methods, and the advantages Anchor's war-converted production offers. No obligation. Write, wire, or phone!



Anchor Post Fence Co.

BALTIMORE
6615 Eastern Avenue

SAN FRANCISCO
460 Fifth Street



**Anchor places
Machines like these
at Your Service:**

Milling Machines

Lathes

Shapers

Planers

Saws

Combination Saw &

Filing Machines

Drill Presses

Punch Presses

Press Brakes

Shears

Grinders

Air Compressors

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Galvanizing Plant

Blacksmith Shop

Baking Oven

Arc Welders

Spot Welders

Spray Booths

Pipe Benders

Bonderizing Plant

When writing Anchor Post Fence Co. please mention Purchasing

Picked for the Job!



**BUY MORE
WAR BONDS**

International Paper Company

220 EAST 42nd STREET, NEW YORK, N. Y.



PAPERS FOR PRINTING AND CONVERTING

When writing International Paper Company please mention Purchasing

THE SIGNAL CORPS

"GETS THE MESSAGE THROUGH"

This nerve center of the army demands split-second coordination — the ability to work like lightning yet keep cool as ice. Courage? All in the world. The kind that enabled the bulldog to lick the timber wolf three times his size. And most of all, ingenious resourcefulness — that can take communications equipment reduced to junk and make it talk again under fire. Men who can splice a cable one-handed or run the gauntlet through modern war's hell.

So, too, Adirondack Bond is picked for the job to get the message through... because it's a watermarked 100% sulphite bond paper that can take it to perfection — printed, typed, or written.



Companion Papers

INTERNATIONAL MIMEO SCRIPT — Ideal for mimeo work. INTERNATIONAL DUPLICATOR — More copies, clear reproduction, in gelatin or spirit process. BEESWING MANIFOLD — Strong, lightweight, watermarked manifold paper. ADIRONDACK LEDGER — Economical, strong, watermarked ledger sheet; for accounting and records. SPRINGHILL TAG — Index and Bristol.

BUSINESS MACHINES AND STATIONERY STORES



Swift & Company's "board of strategy" for the purchase of office equipment and supplies. At the head of the table sits L. A. Shepherd, head of the Purchasing

Department, flanked on his right by W. H. Clay, and on his left by M. C. Morris. The three men in the foreground are, left to right, R. E. Eck, who teams with Morris on

purchasing, H. H. Donohew, Office Manager, and (with back to camera) E. A. Bennett, Custodian of the company's General Office building in Chicago.

PURCHASE OF OFFICE SUPPLIES AT SWIFT & COMPANY

A specialized section of the centralized purchasing department maintains quality standards and economically services the office needs of the headquarters organization and 600 branch offices

By HERBERT E. FLEMING

ON TYPEWRITERS, accounting machines, desks, lockers, pencils, stationery, and rubber stamps, the buyers of office equipment and supplies in the central Purchasing Department of Swift & Company have had illuminating experiences. They are worthy of study by any buyer of office machines and materials.

They show that through specialization, ingenuity, and industry, buyers of office equipment and supplies can bag big results. They prove that buyers can: (1) secure competition from many sources of supply and lowest first costs and maintenance costs consistent with maintaining quality; (2) give users in their companies' departments what they want within the limits of standardization; (3) adapt to the situation when win-the-war needs require purchase of substitutes.

Such are some of the general results attained through centralized buying of office equipment and supplies for Swift & Company. This is purchasing for many industries within an industry. It is buying

for some 600 office, sales, and production units in meat packing plants, branch sales houses, dairy and poultry plants, oil refineries, vegetable oil mills, and fertilizer plants in the United States.

Two of the twenty-five buyers in the headquarters Purchasing Department, on



The office equipment and supplies purchasing team in action. M. C. Morris, left, and R. E. Eck are seated at one of the famous double desks in universal use by Swift & Company office workers.

the fourth floor of Swift's five-story general office building in the Union Stock Yards, Chicago, purchase office machines, furniture, stationery, and supplies. They devote full time to such purchases.

Mark C. Morris and Ralph E. Eck are the buyers of office equipment and supplies for Swift & Company. They carry on their work at a double desk not far from the reception-space railing where salesmen are met. Mr. Morris has been buying office furniture, machines, and supplies for Swift for twenty years. Mr. Eck has been at it since April, 1941, when he succeeded R. T. O'Neal, transferred to be a buyer of chemicals.

Specialization and the application of standards in buying for the offices at Swift & Company are a development of more than a score of years. Up to ten years ago this buying was done in the Office Manager's Department. After transfer to the Purchasing Department, the development was under the general direction of Joseph B. Rogers, who retired as General Purchasing Agent in January,

1942. Lewis A. Shepherd, who succeeded Mr. Rogers as General Purchasing Agent, formerly was head of the division containing the office supply buyers. William H. Clay, formerly head of the unique Departmental Methods Division of this Purchasing Department, is now head of the division including the office-item buyers. The entire Purchasing Department is under the jurisdiction of K. H. Clarke, Vice President.

The complete lists of things purchased by the two buyers of office equipment and supplies, given in an adjoining column, show that they handle 173 items. Conspicuous on the Morris list of 104 items are adding, book-keeping, and calculating machines, typewriters, desks, and filing cabinets; binders and covers, binder posts and sections, erasers, leather goods, pencils, and rubber stamps. Prominent on the Eck list of 69 items are addressing, stencil and label-pasting machines, lockers, books, forms, letterheads, envelopes, inks, time-pieces.

The dollar volume of annual purchases of this section of a division of the Swift Purchasing Department, in a peace-time year, of office machines, furniture, stationery and miscellaneous, totals \$725,000. That is not large in comparison with the total of over \$35,000,000 for the Purchasing Department, or with the total of over \$556,000,000 of the company's purchases of livestock and other materials of

production. But it is more than large enough to bring out both general and specific points of significance for buyers in any company.

To maintain untrammelled competition in this purchasing, Mr. Shepherd takes a strong position in reference to any salesman. This is that, except when Purchasing Department buyers take salesmen to other departments for joint consideration of a problem, no salesman shall go direct to a using department.

"No one in a non-buying department has time to compare the products of all or many sources of supply on a given item," said Mr. Shepherd. "If a department head or anyone else in a using department listens to a salesman of strong personality, gets sold on his product, and insists on having it, that ends the performance of the real buying function."

There have been cases of office appliance manufacturers running campaign attempts to sell office managers at Swift establishments throughout the country on their machines. But this did them no good. The central Purchasing Department considered competitive makes on their merits. The practice is to get quotations from at least five vendors of each item.

As to the items named in the opening sentence of this article, here are some significant details, gathered by the writer:

Typewriters. Virtually all standard makes are included in the Swift inventory,

but when a new stenographer from a shorthand school takes a position at Swift's general offices she is given a typewriter of her choice, one of the make on which she learned to type. That is the time for all good men to come to the aid of the newcomer. Letting her choose her machine prevents alibis. More important, it tends to render the position attractive to her, notwithstanding her problem of adjustment to the stockyards locale and to the fact that her noon hour cannot be devoted to spending her salary in Loop District shopping. The stenographer who has been a year at Swift's will use any standard typewriter.

When the War Production Board cut off manufacture of typewriters and issued its call for them for Army and Navy use, that call had a specially strong appeal. It was based on the need of radio operators in the service for machines to use in keeping up to the minute on their logs of orders received by air, that need in the Navy, for example, being per vessel: battleship, 59 typewriters; aircraft carrier, 55; cruiser, 50; destroyer, 7. The Swift & Company answer was to send to the WPB 270 of its typewriters bought since 1935.

In ordinary times on the purchase of new typewriters the Swift buyers trade in typewriters after they have been used by full-time stenographers for four or five

(Continued from page 160)

OFFICE SUPPLY PURCHASING LIST AT SWIFT & COMPANY

Items Purchased by M. C. Morris

OFFICE FURNITURE & MACHINERY

Adding Machines	Line-A-Time Machines
Awnings	Linoleum
Bookkeeping Machines and	Mailing Machines
Trays	Mimeograph Machines and
Bulletin Boards and	Supplies
Directories	Money Changers
Calculating Machines	Perforators
Carpeting	Postage Meters
Cash Registers	Receptacles—Waste Paper
Chairs	and Towels
Check Writers and Signers	Safes
Desks	Safety Belts
Dictating Machines and	Stands—Office Machine
Supplies	Stools—Wood and Steel
Duplicators and Supplies	Typewriters and Billing
(except ink and paper)	Machines
Filing Cabinets and Shelving	Venetian Blinds
Furniture, Rest Room	Window Cleaning
Gummed Tape Machines	Window Shades
Leatherette	

MISCELLANEOUS STATIONERY ITEMS

Binders & Covers—Loose	Labels (Caution)
Leaf Index	Leads, Pencil
Binder Posts and Sections	Leather Goods—Portfolios
Binders, McBee	Suit Cases
Binding Cloth	Trunks
Blotters and Holders	Sample Cases
Blotter Rules	Mail Bags
Book Binding	Loose Leaf Book Refills
Calendar Pads and Stands	Mail Openers
Carbon Paper and Rolls	Maps and Map Tacks
Cards, Ruled, Record	Pads
Cash Boxes	Paste
Clips, Paper	Pencils—Automatic
Clip-Boards—Metal	Lengtheners
Aluminum	Sharpeners
Wood	Wood
Copy Books and Presses	Pens—Points
Covers, Order Book	Fountain
Duroflex	HOLDERS
Leather	Pins—Plain
Erasers—Tips	Ticket
Ink	Punches—Paper
Pencil	Ribbons—Cloth
Fluid	All Office Machines
Fasteners—Paper, Machine	Time Clock
& Supplies	Multicolor Press
Files—Box, Glides and	Rubber Bands
Dividers	Rules—Desk
Glue Pots and Brushes	Blotter
Ink Wells	

Scales—Postage
Stamps—Rubber
Time
Numbering
Stencil Paper for
Mimeograph

Tape—Adhesive
Transparent
Typewriter Key Tops
Type Cleaner
Waste Baskets
Wax—Sealing

MISCELLANEOUS

Knife Scabbards Napkins, Sanitary

Items Purchased by R. E. Eck

EQUIPMENT

Addressing Machines and	Machines—Label Pasting
Supplies	Stencil
Counters	Signs—Metal, Cast, etc.
Furniture, Drafting	Stop Watches
Globes	Time Clocks
Graphotypes	Watchclocks
Lockers, Clothes	

STATIONERY SUPPLIES

Artists' Colors	Ink and Marking Fluids
Books—Counter	Branding—all kinds
Indexed	Laundry—Indelible
Library and Publica-	Mimeograph
tions	Stamp Pad
Memo	Stencil—cake and liquid
Note, Steno	Writing
Record Coupon	Duplicator
Tally	Recording Instrument
Calendars	Drawing Instruments
Cards—Engraved	Paper—Miscellaneous
Tabulating	Blueprint
Charts, Time	Detail
Checks, Lithographed	Drawing
Drawing Instruments and	Graph
Supplies	Negative
Envelopes—Glassine	Rolls for Adding
Kraft	Machines
Manila	Cash Register, etc.
White	Photostat Supplies
Miscellaneous	Slide Rules
Folders, File	Tape—Fire Alarm
Letterheads—Engraved	Stenotype
Lithographed	Teletype
Pads, Scratch	

FORMS

Bills of Lading—Pads, Rolls	Planographed
Carbonized—all kinds	Legal Briefs
Continuous	Register
Fanfold	Ruled Paper
Interleaved	Sales Book



"IDLE TIME" on machines like these slows up war production. Don't keep them waiting for an antiquated production control system. Step up your factory paper work—with the help of Mimeograph equipment.

One Writing Performs Five Paper Work Functions

Read how a large manufacturer of heavy industrial equipment stepped up his production and efficiency by reducing five paper work functions to one writing—with the Mimeograph duplicator.

When a manufacturer of heavy industrial equipment switched to war work on a mass production "straight line" basis, he found himself entangled in a real problem of production control.

His old paper work system—based on multiple carbon copies—couldn't take it. "Travelers" smeared and blurred, time cards had to be handwritten, productive time was wasted because instructions were not clear.

The government was requesting maximum output. The paper work system needed a complete overhauling. So he turned to the Mimeograph duplicator.

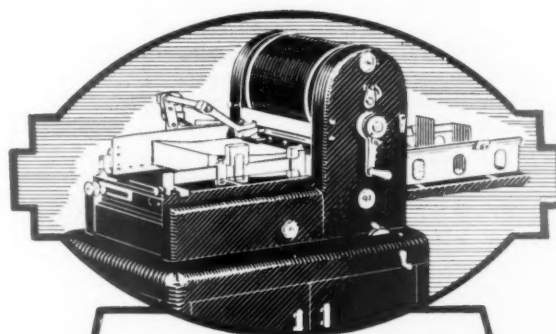
Now five paper work functions are performed in a single writing on a Mimeograph brand stencil sheet:

*manufacturing and routing sheet,
material requisition,
shop "traveler,"
time cards, and
cost analysis.*

With up to 500 production orders every day in this plant, the new "one-writing" system has already made important savings in productive time.

In addition, the clean-cut, black-on-white copy produced by Mimeograph equipment makes for easier, surer reading . . . provides permanent copies . . . cuts down errors, spoilage, misdirected shipments.

The Mimeograph distributor in your community is familiar with problems of factory paper work. He can help you speed up production through duplication. Call him—or write A. B. DICK COMPANY, Chicago.



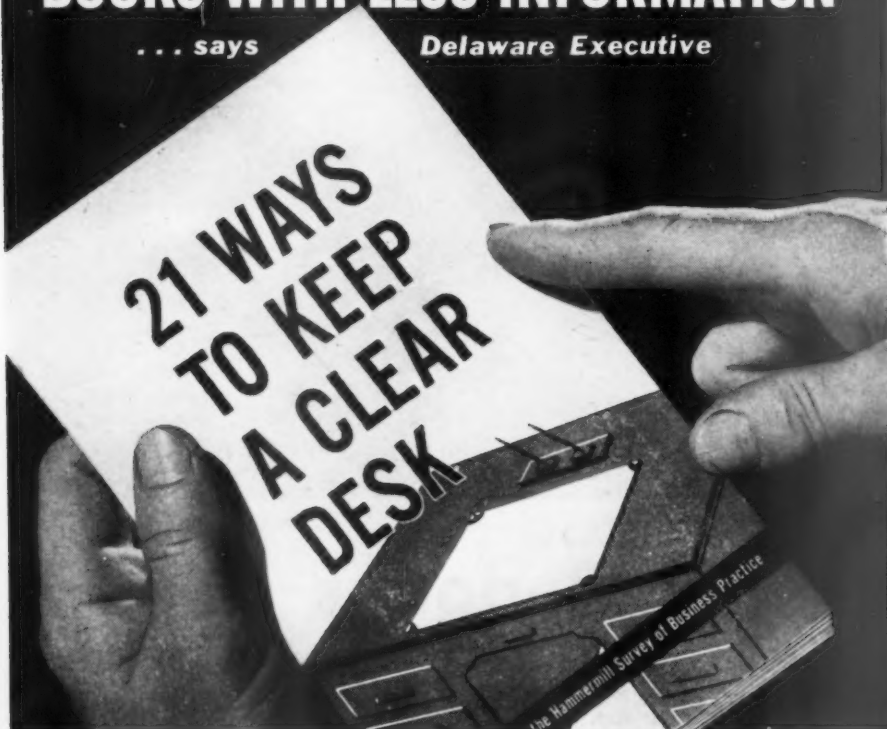
Mimeograph duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

"I'VE PAID AS MUCH AS \$4⁰⁰ FOR BOOKS WITH LESS INFORMATION"

... says

Delaware Executive



IT'S YOURS—FREE

— if you mail coupon now!

WARTIME pressure getting you down? Are you up to your ears in red tape, with a desk that looks a "junk heap"? Do you spend half your day attending personally to 1001 details that ought to be passed on to others . . . then lie awake half the night worrying about jobs you haven't had time to get at? Couldn't you accomplish more if you could unload those details, free your mind and your desk for important matters?

Then send today for your free copy of "21 Ways to Keep a Clear Desk" — the time-saving book that has helped thousands of hard-pressed businessmen.

This book is full of practical ideas on how to organize work, speed up routine, avoid "junk heap" desks. It gives you specific, tested ways to handle details almost automatically — schedule jobs, keep them moving, get them done right and fast. It outlines proven time-savers for men in six different office jobs. Get a copy of "21 Ways" book now.

HOW TO PUT THESE IDEAS TO WORK



Send for booklet, "How to Design a Business Form." It shows how to design forms that answer the who, what, when, where and how of every job . . . how to organize form control . . . how to set up a color signal system. Contains check list for testing your present forms.

Hundreds of businessmen say this free time-saver speeds war work and avoids "junk heap" desks

Indiana: "Obtained valuable suggestions which have saved me time and trouble by eliminating much confusing detail on and in my desk."

Vermont: "Your booklet has been of considerable aid in building up office organization, which under present conditions is necessarily composed of young and inexperienced people."

Michigan: "It has helped me to distribute my work more evenly and also provided a better follow-up method."

Missouri: "With your ideas we have revised some of our forms and instituted new ones at a saving all around."

Wisconsin: "It gave me two ideas for cutting out waste motion."

Use this Valuable Coupon



Hammermill Paper Co.,
Erie, Pa.

Please send me without charge copies of "21 Ways to Keep a Clear Desk" and "How to Design a Business Form."

Name

Position
(Please attach to your company letterhead)

PU-FE

When writing Hammermill Paper Co. please mention Purchasing

(Continued from page 158)

years. This they have found to be about the right time to take advantage of improvements in models. A record of repairs is kept on each machine. The depreciation charge is \$1 a month.

Adaptations in use for carrying the company through the duration on its remaining inventory of 3,000 typewriters of all ages have been made. For example, a suggestion on correspondence put out in a "G. O. Bulletin" signed merely, "Office Manager—H. H. D.," meaning H. H. Donohew, is being carried out by high and low in the Swift organization. This is, on any letter requiring an answer, to send it in duplicate, original and carbon copy; and then for the receiver to answer with either typed or pencil notation on the duplicate. Moreover the company's long-standing practice of using "omnibus envelopes" for mailing inter-unit correspondence, sometimes 180 pieces in one envelope, saves not only postage but also



Spreading 5 ft. man to man the two-man desks are space savers and time-savers for employees having related work. Each is 48" wide.

stenographers' time. There is a similar saving from its war-time practice of likewise using no envelopes on intra-unit memos.

Accounting Machines. Among other office machines purchased those running into largest dollar volume at Swift's are sales accounting machines—variations of cash registers to provide for sales distribution by commodities, units, and prices. Purchases of book-keeping, calculating, and adding machines are also extensive. For procuring machines of these types the buyer needs to know not only what they will do but what are the real accounting problems of the departments using them. Here Mr. Morris' training in general accounting and experience in company accounting have stood the Purchasing Department in good stead.

Desks and Other Furniture. Double desks, conference tables, and other pieces of furniture, in golden oak, mostly matched, and made by vendors competing in carrying out Swift specifications, are a special source of pride of the Purchasing Department and of the 2,000 men and women in the general offices. The two-man desks are distinctive. Each of these desks has a top 60 inches from man to man and 48 inches wide. Except for a narrow border the top is covered with dull finish black leather, which affords a smooth working surface and a contrasting background for papers. For the man on each

(Continued on page 162)



Note the *CARBINE*...

It's one of the items we're making now instead of Office Machines



★ Enlist Your Dollars
Buy More War Bonds
To Shorten The Duration

"After 35 years, the Army goes from the pistol to the carbine. This will be the weapon for all officers up to the rank of captain, and for the supporting troops that carried pistols and relied on riflemen for defense. The new Winchester light, short-barreled carbine has range enough to be a weapon of offense, whereas the .45-caliber pistol is purely a defensive weapon. The Winchester carbine is rated high, and is judged to increase the fire power of the infantry regiment by 33 per cent." As reported by a prominent news magazine.

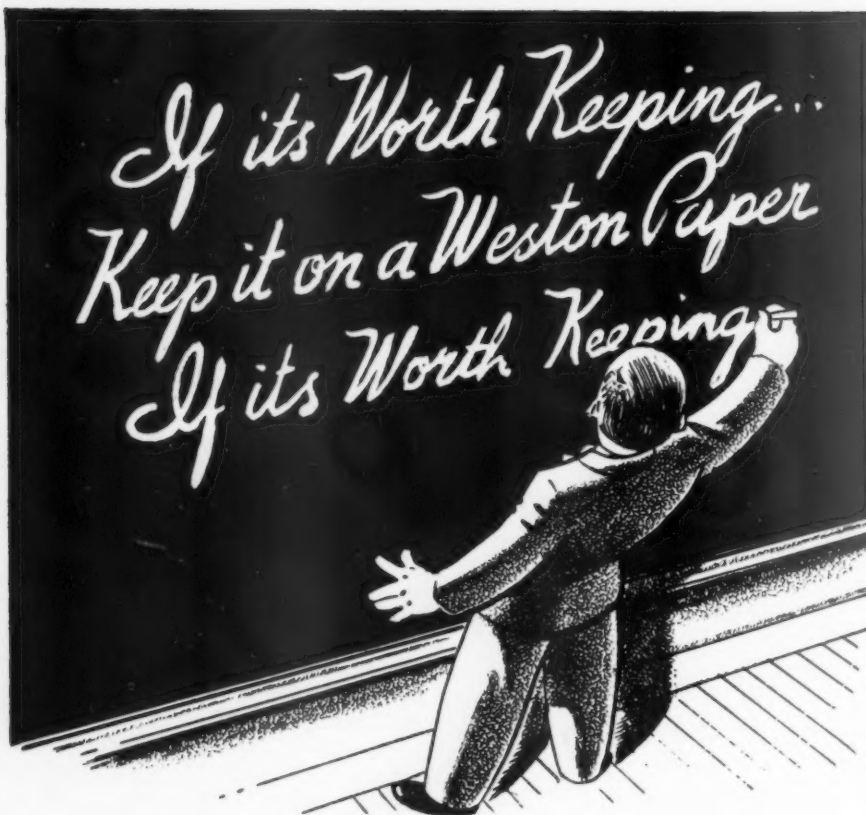
Underwood Elliott Fisher Company, One Park Ave., New York

Carbines are now in mass production by

Underwood Elliott Fisher Company

Former and Future Makers of Typewriters, Adding and Accounting Machines

When writing Underwood Elliott Fisher Company please mention Purchasing



WRITING IT ON the blackboard a hundred times might prove an exceedingly worth while exercise for everyone in your office responsible for the preparation of important records, forms or messages.

WESTON cotton fibre content papers are made expressly for records that are worth keeping, by an organization that has specialized in this class of papers exclusively for generations.

Your supplier will help you select the right *Weston* paper for each specific application.



WRITE FOR *Weston's "Red Book"*, Wartime Edition. It provides an up-to-the-minute, handy reference on the cotton fibre content papers now available. Every buyer and user of records, forms and correspondence needs a copy. Address Dept. A.

IF IT'S WORTH *Keeping*, KEEP IT ON A...

LEDGERS	
BYRON WESTON CO. LINEN RECORD (Extra No. 1, 100% New White Cotton and Linen Clipping)	
DEFIANCE LEDGER (100% Cotton Fibre Content)	
WAVELY LEDGER (75%)	CENTERHILL LEDGER (75%)
WINCHESTER LEDGER (95%)	BLACKSTONE LEDGER (25%)
INDEXES	
DEFIANCE INDEX (100%)	WINCHESTER INDEX (95%)
WESTON'S MACHINE POSTING INDEX (50%)	
MACHINE ACCOUNTING	
TYPACOUNT LEDGER (75%)	
WESTON'S MACHINE POSTING LEDGER (50%)	
BONDS	
WESTON'S BOND (Extra No. 1, 100%)	
DEFIANCE BOND (100%)	
HOLMESDALE BOND (75%)	
WINCHESTER BOND (95%)	
BLACKSTONE BOND (25%)	

WESTON PAPER

BYRON WESTON COMPANY
Makers of High Grade Papers
DALTON • MASSACHUSETTS

When writing Byron Weston Company please mention Purchasing

(Continued from page 160)

side of one of these desks it has two sets of drawers, exceptionally wide to afford easy handling of papers. "In addition to being valuable savers of floor space, these double desks enable employees with related work to be in close touch, which saves a good deal of traffic," said Mr. Morris. And he ought to know, since he has long been one of two using such a desk in buying office equipment and supplies.

The latest models of these desks have composition insets on the inner upright legs, where knees are wont to get bumped and chairs are wont to bump and splinter wooden desks. Moreover there is not a nail anywhere in one of these desks.

Ordered in Lots of 50

Orders for them are placed in minimum lots of fifty, to justify the wood-working manufacturers in making set-ups for their economical production. No one source, however, has a monopoly on supplying them.

In view of the growing restriction on wood, following that on metal, the Swift buyers do not expect to be able to get many more, if any, of these desks for the duration. Here the company's Office Custodian Department comes into the picture. It has a record of making 33-year old desks look as good as new.

While all desks at Swift's are of wood, the filing cabinets hitherto purchased there are of steel. In their purchase, effort is made to be sure of good strong runners.

Lockers. The Swift experience with clothes lockers shows three phases which buyers have been going through as transfers of production from civilian to military have become more and more urgent: (1) getting supplies as usual, by constant, extra search for sources; (2) when unable to locate sources, finding or developing a substitute; (3) seeing that substitute find its way to the critical list, requiring search for another or adjusting to getting along without something needed.

1,200 to 1,500 Lockers Annually

Hitherto for its normal annual requirement of clothes lockers, involving the buying of from 1,200 to 1,500, and conformance to the regulations of the Bureau of Animal Industry, this company has used a steel locker, 15 x 18 x 60", with sloping top. Since issuance of the WPB order barring production of steel lockers one of Mr. Eck's duties has been in connection with developing a practical substitute, a wooden locker that would not deteriorate in packing plant dressing rooms. This locker is made of a mortise and glued wood frame, with front and door stiles of oak, and top, back, sides, door, and partitions of tempered prestwood. The prestwood is glued to the wood frame with waterproof glue. The whole locker is treated with a sealer after assembly. The only metal parts are hinges and padlock eyes.

But recently this substitute, developed after long effort, was added to the list of critical items. What to do next? That poses a new demand for ingenuity.

Pencils. In recent years the Swift Pur-

(Continued on page 165)

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Take Cover!



SAVE to WIN

Buy War Bonds!

On the battle front, fighting men pay prompt heed to signals on which their lives may depend. ● On the home front, you'll find the men and women behind the men behind the guns equally alert to production signals flashed to them on the six easy-to-see, hard-to-overlook wartime colors of

HOWARD BOND

Also available in White and Ivory . . . for letterheads

"Yes! 3 typewriters can do the work of 4!" and typists

25%
OF OUR TYPEWRITERS
HAVE GONE TO WAR!
KEEP YOURS BUSY



Note the "Forms with the Punch" which engage the pins on Standard's Registrator platen for positive feed and continuous writing

FEWER typewriters . . . FEWER typists . . . MORE paper work than ever!

WHAT'S THE ANSWER? Typists are hard to get—typewriters are going to war—more clerical work every day! With this triple-threat facing your war production, here is something you should know: Standard methods make 3 typewriters do the work of 4, and even more important, enable 3 typists to do the work of 4.

How? Standard makes it possible to write systems of control continuously with Standard Kant-Slip forms. No radical changes are involved, no special training for typists is required. Many time-wasting, non-productive operations are immediately eliminated—typing output is often increased 25% to 50% or more.

At the same time, Formcraft engineering—an important part of

Standard's service—eliminates useless forms, saves paper, combines related forms for one writing, streamlines form design for faster, more accurate typing—thus speeding the flow of paper work.

Something new? Frankly, no. Thousands of America's leading companies have been using Standard methods over the past 30 years. Today the Standard organization of more than 1,000 people is ready to serve additional war industries and government organizations.



GET YOUR COPY of "What's the Answer?"—Standard's 28-page booklet fully describing how you can send typewriters to war, do more work on remaining machines, and relieve the pressure of personnel problems with Standard's typed and handwritten systems of business control. Write today.

STANDARD'S Cabinet Model Register makes the pencil a business machine. Makes it possible to convert many typewritten records to handwritten systems—saving typewriters. Fully described in "What's the Answer?"



THE STANDARD REGISTER COMPANY
201 ALBANY ST. DAYTON, OHIO
Pacific Coast: Sunset McKee-Standard Register Sales Co., Oakland, Calif. Canada: Crain Printers, Ltd., Ottawa, Ont. Great Britain: W. H. Smith & Son, Ltd., London.

© 1943 THE STANDARD REGISTER CO.

Standard Systems

of Business Control

○ "The Forms With the Punch"

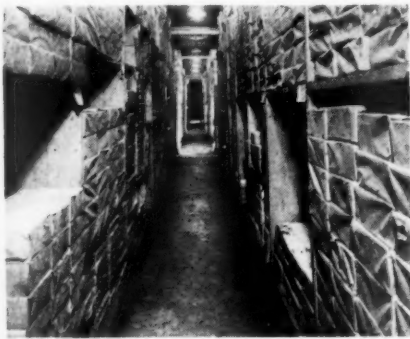
These holes mean The Standard Register Co. ○

When writing The Standard Register Company please mention Purchasing

(Continued from page 162)

chasing Department has been buying 100,000 automatic pencils, and 160,000 tubes of four-inch leads, a year. Each employee is given two pencils a year and an unlimited supply of leads, but if wanting additional pencils pays 6 cents each for them. The policy of using automatic pencils was adopted in 1933 after tests of comparative merits and costs of wooden pencils and automatics had been made for this company's uses. Here, it may be noted, a meat packing concern, in an industry often said to save everything in the hog except the squeal, cut out the squeak of pencil sharpeners. That was incidental, after cutting out the waste involved in two- and three-inch stubs of wooden pencils.

Through its buying of automatic pencils, in which there has been constant competition by their makers offering new models, the Swift Purchasing Department has effected a saving of over \$8,000 a year.



12,000 forms are handled in the Stationery Supply Department. Of these 5,000 forms are kept in stock, the rest being bought as needed.

But again a wartime adjustment is in the offing. While the plastic barrel part of an automatic pencil might still be available, the metal formerly going into its internal mechanism is now going into munitions. The Swift buyer will have to go back to wooden pencils. In doing so he will aim to get the benefit of maximum competition from the pencil supply men, and that too in view of limitations recently placed on their output.

Stationery. Cooperation of the Swift Purchasing Department buyers of office equipment and supplies with all departments is close. It appears to be closest with the Stationery Supply Department. This is a large department with twelve aisles of stationery stores on one floor of a building, and other stocks in the basement and also a warehouse, several blocks away from the general offices—a department having 26,568 square feet of floor space. For it the Purchasing Department buyers of office supplies place orders aggregating \$560,000 annually. The largest single sub-total is for fanfold billing forms. Sales tickets run to a large figure—22,000,000 tickets a year of the kind in which the users insert the carbons and 13,000,000 interleaved.

This Stationery Supply Department handles 12,000 different forms. These are worked up primarily by the company's Personnel and Methods Department. But

when the Purchasing Department men discover, for example, that 95% of the users of a given form are not finding it necessary to use over half of it, they recommend that it be cut in half. In maintaining its inventory of forms the Stationery Supply Department keeps in stock each form used by three or more branch houses or other operating units. There are 5,000 such forms. Of the remaining 7,000, supplies are bought as needed.

The routing of requisitions for stationery is different from that for office machines and furniture. For the latter the requisitions from the Office Manager at the general office and the Office Managers at outside points go direct to the central Purchasing Department at Chicago, and

that department, after getting approvals from the respective general accounting departments for the grand divisions of the business, writes up and issues the purchase orders. For the stationery and miscellaneous supplies the requisitions go to the Stationery Supply Department, which writes up the purchase orders in part. It does not insert the names of suppliers or prices. That is done by the buyers for the Purchasing Department, and these orders are signed by the Purchasing Agent.

Rubber Stamps. More individual orders are placed by Mr. Morris for rubber stamps than for any of the other items on his long list. The main problem concerning them is not that of getting the

AIN'T IT THE TRUTH

By Stern



Exaggerated? Of course! But isn't it true, Mr. Business Executive, that your expenditure for printed forms has gone up and up and is still going up? The answer to this headache is the new Old Town Dupli-Form. On a 25-copy form, for example, 1000 Dupli-Forms will replace 25,000 printed forms. But economy of cash and storage space is only one advantage of Dupli-Form—It will pay you to look into the others.

WHAT Dupli-form IS

Have any multiple copy form set up on an Old Town DUPLI-FORM. Your typist fills in the DUPLI-FORM... then runs off as many copies as you require on your direct or fluid process duplicator.

WHAT Dupli-form DOES

No More Large Printing Bills! On a 25 copy form, 1000 DUPLI-FORMS will replace 25,000 printed forms—and up!

No More Weak Copies! Whether you want a dozen copies or hundreds, DUPLI-FORM will give them to you... every one clean and distinct with photographic accuracy.

No More Special Machines! With DUPLI-FORM every typewriter becomes a billing or manifold machine. Makes copies of pencil writing without register or special pencil.

No More Fear of Errors! Instead of having to correct every copy, just correct the original DUPLI-FORM.

No More Collating! Only the original DUPLI-FORM goes into your typewriter. No aggravation and waste of time to stuff forms with carbon paper and crowd into the typewriter.

No More Slipping! DUPLI-FORM guarantees precision registry... right down to the last line of the last copy. The form itself is duplicated along with typed-in data.

Old Town RIBBON & CARBON CO. Inc.
750 PACIFIC STREET, BROOKLYN, NEW YORK
Foremost makers of ribbons and carbons for every use

When writing Old Town Ribbon & Carbon Co., Inc. please mention Purchasing

SO MUCH FOR SO LITTLE



The finest L. L. Brown bond, instead of ordinary paper, adds only 2% to letter costs, but makes correspondence 100% in character, prestige, impressiveness. Your printer will be glad to furnish you with L. L. Brown papers.

L.L. BROWN Bond Paper

MILLS AT ADAMS, MASS.

ESTABLISHED 1849

ADVANCE BOND*

100% New White Linen & Cotton Fibres

L. L. BROWN'S LINEN*

100% New White Linen & Cotton Fibres

FORWARD BOND

100% New Cotton Fibres

GREYLOCK BOND

75% New Cotton Fibres

ESCORT BOND

50% New Cotton Fibres



*Permanent grades

right composition, although, as many buyers realize, the rubber stamp is only 5% rubber. For Swift's the rubber stamps are used to date the products. Special pains are required as to the wording of each stamp; it must be correct according to the requirements of the Bureau of Animal Industry.

Experience of Buyers. For the intensive work of buying office machines, furniture, stationery, and supplies, experience in accounting and related office practice is especially valuable. That is indicated by a summary of the experience of the Swift & Company buyers specializing on this class of purchases.

Mark C. Morris studied accounting at the Walton School of Commerce, Chicago. He started working for Swift & Company nearly twenty-four years ago, a week after honorable discharge from the Rainbow Division of the World War I Army, in which he served overseas. The first ten of his twenty years at the purchase of office machine, furniture and miscellaneous supplies was in the Office Manager Department of the general office before that function was transferred to the Purchasing Department.

Ralph E. Eck entered Swift service in 1926 and for six years was supply man at the South St. Joseph plant. In 1932 he was transferred to the general offices at Chicago, to follow supply research and purchasing accounting. This was succeeded by work in general accounting and in refinery and oil mill accounting. Incidentally, he took many courses at the Swift after-hours school for employees. His work in accounting departments led to his assignment a year and a half ago to the Purchasing Department as a buyer of office equipment, stationery, and supplies.

1 1 1

RIBBON SPOOL SHORTAGE

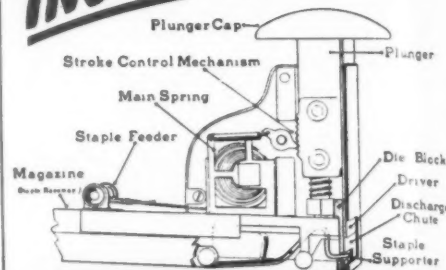
Due to curtailment of the production of inked ribbon spools under Office Supplies General Limitation Order L-73, revised, the supply of certain types has been exhausted; other types now in the hands of manufacturers are running short, and it is reported that substitute spools which can be had under high preference ratings are far from ample. It is felt that in due course ribbons will be marketed on carrier spools from which they will have to be re-wound on typewriter spools. Some manufacturers are reported to be filling orders on the basis of a spool for a spool, that is, supplying filled metal spools for a corresponding number of empties returned.

1 1 1

AIR RAID PROTECTION FOR PURCHASING RECORDS

Pointing out that "Modern warfare is no respecter of property or history", 24-page, pocket size booklet on "Air Raid Protection for Valuable Records", published by the Byron Weston Co., Dalton, Mass., states that air-raids in this country, if they come, will be largely incendiary, that incendiary raids mean fire, and fire whether air-borne or otherwise is the greatest single threat to vital records. The booklet, based on a report by the National Fire Protection Association, covers the

INSIDE STORY OF



ACE STAPLING MACHINES

Whether you specify an Aceliner or an Ace Scout . . . whether you pay \$1.00 or \$6.00 for an Ace Stapler, you are assured of getting the greatest stapler money can buy, in any price range!

The phenomenal record Ace has made since entering the stapling equipment field can be attributed to the type of men who founded and operate the business. In its organization one will find the most skilled and seasoned precision engineers . . . men who have spent many years in developing and perfecting Ace Stapling Equipment.

As a result Ace Fasteners are made with watch-like precision, from the highest quality materials procurable. That's why they last a lifetime and are guaranteed to give satisfactory service.

THE ACE LINE OF STAPLING MACHINES INCLUDES:

The Aceliner, Ace Standard, Ace Pilot, Ace Cadet, Ace Clipper, Ace Glider and Ace Scout. Every one built to Ace's rigid specifications. Priced at from \$1.00 to \$6.00. There's an Ace Stapler to meet every purse and purpose.

SOLD THRU DEALERS EXCLUSIVELY

ACE FASTENER CORPORATION
3415 N. Ashland Ave., Chicago, Ill.

ACE

STAPLING MACHINES



FOR EVERY PURSE AND PURPOSE

When writing advertisers please mention Purchasing

broad subject of protecting records and other papers against bombs and incendiaries, and goes into detail on how to survey records to determine importance and value in classifying them, together with recommended degree of protection for each class of record.

The book also includes a Schedule on Retention of Records (the period they should be retained), under the headings: General and Financial, Treasury, Expenditures, Purchases and Stores, and Sales.

Purchases and Stores

The Purchases and Stores Division, is as follows:

a. MATERIAL LEDGERS

Records of Materials and Supplies on hand—Permanently.

Balance sheets of material and supplies received, issued and on hand at branch supply department—3 years.

b. PURCHASING, ETC.

Copies of purchase orders and authorities for sale of scrap—3 years.

Bids and offers for sale or purchase of materials and supplies—7 years.

Invoices for material purchased, records of such invoices, and freight bills covering charges on materials—Permanently. Price records of purchase (file copy)—Permanently.

Contracts for purchase or sale of materials—Permanently.

Advices or requisitions from storekeeper and others for purchase of materials—3 years.

Summaries and distribution sheets and credit memoranda of materials sold or returned to supply house for credit—Permanently.

Advices acknowledging receipt of orders for material, shipment notices, packing lists, copies of bills of lading—Optional. Records of invoices transmitted to or from storekeeper, copies of shipping instructions, records and reports used for checking and tracing materials, etc.—Optional.

c. MERCHANDISE, MATERIALS AND SUPPLIES RECEIVED AND ISSUED

Records of materials received and issued—Permanently.

Price records of material issued (file copy)—Optional.

Records of materials transferred from one storeroom, department or division to another—3 years.

Records of materials recovered and returned to stock if detailed on retained records and records of inspection and test of materials—3 years.

Minor records pertaining to materials and supplies not involving cost or disposition—Optional.

d. INVENTORIES OF MERCHANDISE, MATERIALS AND SUPPLIES

General inventories, with record of adjustments—7 years.

e. CORRESPONDENCE

Correspondence and records thereof relating to subjects listed therein—For period prescribed for item to which it relates.

Stenographers' notebooks and mechanical device records; extra copies of letters if original is retained—Optional.

Wartime Short Cuts

FOR FASTER, NEATER TYPING

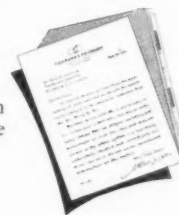
War-rushed businesses have found these uses of Micrometric Carbon Paper a valuable short cut to faster, neater typing:



1. The white, numbered scale keeps the stenographer informed at all times of her exact position on the page. This helps her to plan her spacing so that signatures will not be crowded at bottom of page or perched at top of second sheet.

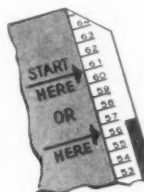


2. For reports and longer letters, uniform margins at top and bottom of page are assured by using the scale.



3. A cut corner at upper left of sheet permits quick removal of carbon paper, simply by pulling the white scale. There's no danger of smudged fingers, either.

4. Carbon paper wear can be increased by starting letters alternately on the line and half-line. Despite these extra advantages, Webster's Micrometric costs no more than other carbon papers of similar grade.



Webster also makes the famous MULTIKOPY carbon paper and STAR BRAND Typewriter ribbons, and can supply you with carbon papers for gelatin hektograph, and spirit process duplicating machines; carbon-paper ribbons for photo offset work; ribbons and carbons for all Elliott-Fisher, Addressing, Teletype, Adding, and International Business Machines.

★ Winning the War Requires Carbon Paper and Typewriter Ribbons ★

For Service and Samples Write:

WEBSTER'S

7 Amherst St., Cambridge, Mass.

CARBON PAPERS and TYPEWRITER RIBBONS

Factory branches in New York, Philadelphia, Chicago, Pittsburgh, and San Francisco

When writing The F. S. Webster Co. please mention Purchasing



AMERICA'S PRE-EMINENT CARBON PAPER

OUTSTANDING TIME and MONEY SAVING FEATURES:

1. ESPECIALLY RESISTANT TO CURL.
2. "QUICK EXTRACTION" FEATURE, WITH CARBON SHEETS CLIPPED AT THE CORNERS, FOR EASY EXTRACTION OF CARBON COPIES.
3. TOUGH TISSUE RESISTS FLAKING, WEAR AND TEAR
4. EACH SHEET BRANDED BY NAME.
5. EACH SHEET BRANDED BY WEIGHT AND WRITING STRENGTH.
6. 3 WEIGHTS-5 WRITING STRENGTHS IN EACH-TO COVER ALL MANIFOLDING REQUIREMENTS.
7. PRODUCES CLEAR, CRISP CARBON COPIES WITH ANY MODEL TYPEWRITER.

Ask your dealer for Silk Gauze—or contact the Columbia office nearest you.

C O L U M B I A

RIBBON & CARBON MANUFACTURING CO., INC.

Main Office & Factory: Glen Cove, L. I., N. Y.

58-64 West 40th Street, New York City
204 Dwight Building, Kansas City, Mo.
227 South LaSalle Street, Chicago, Ill.
155 West Congress Street, Detroit, Mich.
227 East Michigan Street, Milwaukee, Wis.
200 Plymouth Building, Minneapolis, Minn.
107 Union Street, Nashville, Tenn.
1508 Fox Building, Philadelphia, Pa.
208 Standard Life Building, Pittsburgh, Pa.
205 East 6th Street, Cincinnati, Ohio
(Harris-Moers Company)

Also: London, England; Sidney, Australia

L-73 PROHIBITS PRODUCTION OF VARIED OFFICE SUPPLIES

Production of various office supplies—including desk pencil sharpeners and metallic file fasteners—has been ordered stopped by General Limitation Order No. L-73 as amended. Production of metal repair parts for office supplies also is prohibited, with the exception of parts for staplers and perforators (punches). Further limitations on the manufacture of complete staplers and perforators are contained in the amended order.

Assembly of fabricated metal desk pencil sharpener parts was stopped as of January 15.

Complete production of metallic file fasteners has been ordered stopped and manufacturers are no longer permitted to secure metal materials for their production.

Only staplers using eight ounces or less of metal per unit can be produced, and the same metal limit applies to two-hole perforators. Three-hole perforators may include as much as 12 ounces of metal per unit.

Manufacturers no longer are permitted to exceed their quotas to fill preferred orders. This includes Army, Navy and Maritime Commission requisitions. Any manufacturer who already has "borrowed" from his next quarter's raw materials quota for production of preferred orders in this current quarter must reduce his consumption of iron and steel in the next quarter by an equivalent amount.

A saving of about 2,300 tons of steel annually is expected to be effected through this amendment by reducing consumption of critical materials to 7,400 tons annually.

1 1 1

100 ANNIVERSARY YEAR RYERSON STEEL BROCHURE

Celebrating its 100th birthday in wartime, the firm of Joseph T. Ryerson & Son, Inc., Chicago, has commemorated the occasion not with elaborate celebration, but by publishing a fitting brochure "100 Years of Peace and War." Historians will find it interesting, but from the standpoint of reviewing the nation's industrial growth during the past century it may be enjoyed by everyone.

Ben Stahl, illustrator for Saturday Evening Post, handled the principal drawings which dramatize the events in the history of Ryerson and the nation. The pen and ink sketches were drawn by Joseph Feher. The text is handled in an easy, fast moving style. Quite readable and notable too, for its limited references to Ryerson.

The brochure is an excellent example of fine typography, illustration, make-up and production. Copies are available on request.

1 1 1

TYPEWRITER RENTALS RATIONED

Rental of the remaining available typewriters best suited to business needs were rationed as of February 1st, to users engaged in activities essential to the war program, in line with recent OPA announcement.

INSIST ON

Parsons
Papers
FOR YOUR
Forms
Records
Stationery

Superior Quality

MADE FROM COTTON FIBERS

Ask your Printer for Samples
of these fine grade Papers

PARSONS PAPER CO.
HOLYOKE · MASSACHUSETTS



THIN PAPERS

Reduce

TYPING, MAILING
and FILING COSTS

Specify one of

ESLEECK
THIN PAPERS

Ideal for Air Mail, Branch
Office and Foreign
correspondence.

ESLEECK MANUFACTURING COMPANY
TURNERS FALLS, MASSACHUSETTS

When writing advertisers please mention Purchasing

Prominent Users of Strathmore Letterhead Papers: No. 35 of a Series



how much weight **does your letterhead carry?**

Today, from coast to coast, giant TWA planes carry thousands of pounds of vital cargo at record speed, on split-second schedules...A dramatic example of the peak efficiency that is helping to win this war.

Also from coast to coast goes the company letterhead on Strathmore. *At every point of contact*, it represents the *quality* job TWA is doing. More than ever these days, your *letterhead* must be the *salesman* of your business. Choose it carefully.

Fine paper more than pays for itself in the added attention and respect it commands, in the added weight it carries to your important customers and contacts. A letter written on Strathmore Paper costs only a small percent more than a letter written on the cheapest paper you might buy. Such plus value, for so little cost difference, is sound business economy. Write us for detail of "letter" cost.

Strathmore Papers for Letterheads: Strathmore Parchment, Thistlemark Bond, Bay Path Bond, Strathmore Bond, Strathmore Script, Alexandra Brilliant and Strathmore Writing.

STRATHMORE

MAKERS
OF FINE
PAPERS

Strathmore Paper Company, West Springfield, Massachusetts

When writing Strathmore Paper Company please mention Purchasing

PAPER IS PART OF **TODAY'S PICTURE**

Current Strathmore advertising points out how essential paper is to the war effort, features leading industries that use Strathmore in their Victory programs, stresses the point that good letterheads help maintain the reputation every firm is guarding today.

★ ★ ★

This series appears in:

**FORTUNE
TIME
BUSINESS WEEK
UNITED STATES NEWS
NEWSWEEK
FORBES
ADVERTISING & SELLING
TIDE
PRINTERS' INK
SALES MANAGEMENT**

1943 INDUSTRIAL CONSTRUCTION

Construction activity in the industrial engineering and building field during 1943 will be considerably less than during the past two years, but somewhat over normal, according to Harold K. Ferguson, president, The H. K. Ferguson Co., Inc., Cleveland. Emphasis will be placed on what we now regard as "small jobs"—those costing less than a million dollars, he declares, although there undoubtedly will be a few sizeable new plants in all industries.

The trend will be to convert old plants to war work rather than to build new ones, and as the demands of our overseas

forces grow, the demand will be for plant expansions and additions rather than for entirely new plants, Mr. Ferguson points out, and in some industries the expansion programs will be large.

The total construction volume in the entire building industry for 1943 is estimated at \$4,035,000,000 as compared with a total of \$7,915,000,000 for 1942, and yearly average of \$3,775,000,000 for the period 1920-1939.

1 1 1

"HOW TO HARNESS A CONFERENCE"

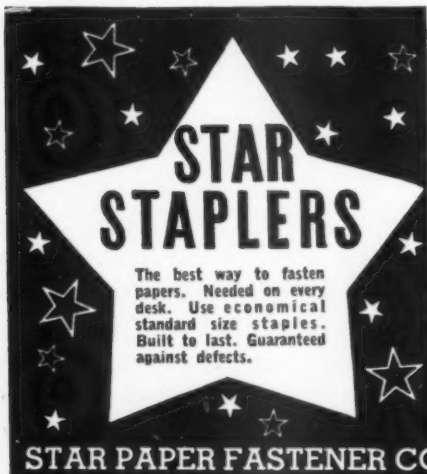
In "How to Harness a Conference", an entertaining booklet being distributed by

the Hammermill Paper Co., Erie, Pa., the author pokes fun at the proverbial business conference and suggests printed forms to help conduct successful conferences, report in writing what was accomplished and check on the progress of the work assigned. He points out that too many conferences "amount merely to a lot of guys chipping in their unpremeditated nickel's worth on unexpected subjects". Printed forms designed to take conferences out of the "sprawl and brawl category" and to help turn conference decisions into action are illustrated. Copy may be had without cost on request.

1 1 1

EXCELLENCE OF AMERICAN WAR MATERIAL PROVED

We have had our equipment tested on the field of battle, states Robert P. Patterson, Under Secretary of War, and in general the comments from active theaters of war have indicated definitely that our troops are being provided with weapons equal or superior to those developed by our enemies. The British have reported "The tanks M4 (American) have made a great impression on everyone and the troops are thrilled with them. The long gun is magnificent both in accuracy and in penetration. The users are giving an esteemed place to American equipment." Likewise our own troops have reported their satisfaction with the equipment with which they are being provided. Various types of antitank and antiaircraft ammunition developed and produced here have won universal commendation.



STAR STAPLERS

The best way to fasten papers. Needed on every desk. Use economical standard size staples. Built to last. Guaranteed against defects.

STAR PAPER FASTENER CO., NORWALK, CONN. Dept. P



STAPLERS STILL AVAILABLE On Priority Orders.

Essential industries needing paper FASTENERS and TACKERS can still be supplied.

Model S 122A shown above lists for only \$1.90 and uses inexpensive standard staples. Write today for quantity prices.



C. HOWARD DEVILDOG

Salutes **GREAT AMERICANS BORN IN FEBRUARY!**

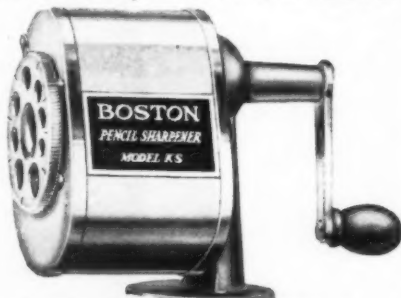
VICTOR HERBERT	FEB. 1st, 1859
HORACE GREELEY	FEB. 3rd, 1811
MARK HOPKINS	FEB. 4th, 1802
THOMAS A. EDISON	FEB. 11th, 1847
ABRAHAM LINCOLN	FEB. 12th, 1809
GEORGE WASHINGTON	FEB. 22nd, 1732
WM. F. CODY (BUFFALO BILL)	FEB. 26th, 1846
HENRY W. LONGFELLOW	FEB. 27th, 1807

And every American who buys U. S. War Bonds

in February is a

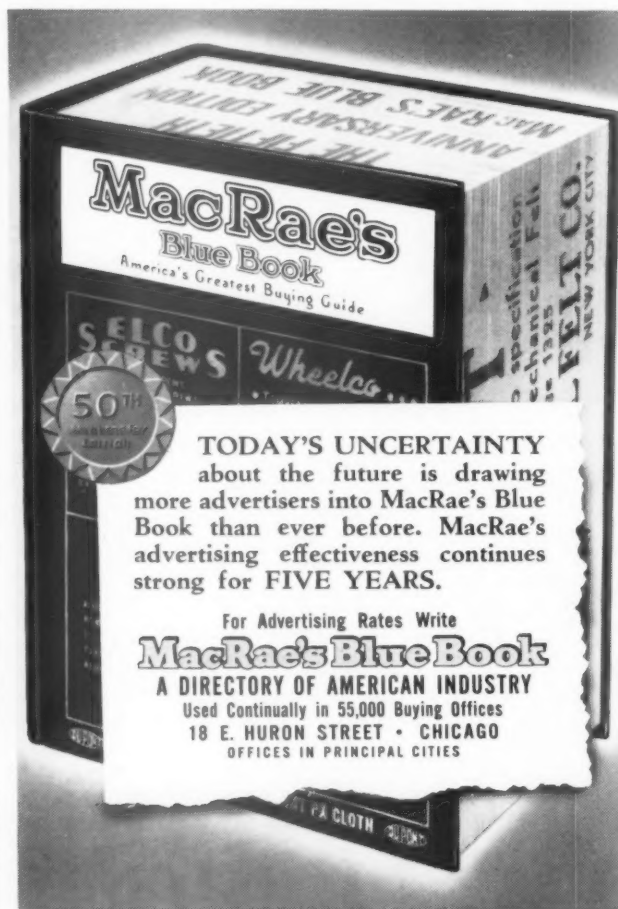
Great American!

WPB ORDER halted the manufacture of all pencil sharpeners and parts to conserve steel for war materials. Until we receive relief from this order it is suggested that schools take best possible care of machines in classrooms. Oil regularly.



C. HOWARD HUNT PEN CO., CAMDEN, N. J.

BOSTON
PENCIL SHARPENERS



MacRae's Blue Book
America's Greatest Buying Guide

50th Anniversary Edition

TODAY'S UNCERTAINTY about the future is drawing more advertisers into MacRae's Blue Book than ever before. MacRae's advertising effectiveness continues strong for FIVE YEARS.

For Advertising Rates Write
MacRae's Blue Book
A DIRECTORY OF AMERICAN INDUSTRY
Used Continually in 55,000 Buying Offices
18 E. HURON STREET • CHICAGO
OFFICES IN PRINCIPAL CITIES

Dear Governor Throop: When I was in Albany a fortnight ago, one of the young men in the office of the merchant who handles our paper showed me, with great pride, the lieutenant's commission he had received at your hands, signed by you as Commander-in-Chief of the Army and Admiral of the Navy of the State of New York. When I took the document from him, I readily perceived it to be executed on paper of our making. For the compliment that you have paid us we are grateful and would make this acknowledgment.

The pride we take in the manufacture of our paper is akin to that of the young men who put on the uniform of the armed services, and the fidelity they owe their oath is shared by us in our determination to hold fast to the standards of quality that we set for ourselves when we established this business.

So we conceive the structure of our society to be built and the security of our country guaranteed. For it is from our mills, our businesses, and our farms that our soldiers and sailors come, bringing with them the spirit of the enterprises in which they are engaged. To them they return, when duty is done; as did Cincinnatus of old. By nature a peaceable people, we are equally ready to defend our homes and our freedoms and, by the genius of our founding fathers, expression has been given to this dual role in which each of us is cast by combining in the person of the President and of the governors of the several states the control of both civil and military affairs.

So, as Commander-in-Chief I would salute you and as Governor offer you my respects, renewing my thanks to you for signing and sealing commissions in your military establishment on paper bearing our mark.

Truly yours,
ZENAS CRANE

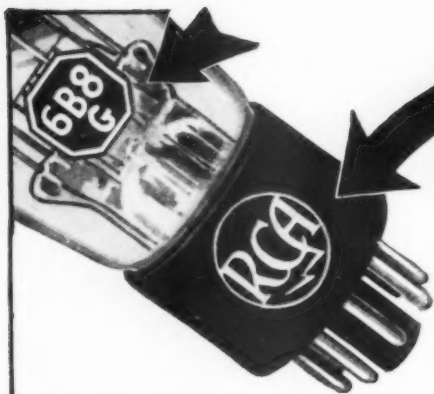
Dalton, Massachusetts
19 April 1829

For 142 years Crane has been making paper of cotton and linen fibres only, employing the accumulated skill and experience of five generations in the conversion of these enduring materials into distinctive papers for letters, documents of importance and record, and tokens of value, such as the United States War Bonds you are now buying in the aid of your country and that all men may be free.



CRANE'S FINE PAPERS • MADE IN DALTON, MASSACHUSETTS • SINCE 1801

When writing Crane & Company please mention Purchasing



How did that
get there?

Model RA put it there. In 1-1/5 seconds!
And on 2999 other RCA Radiotron bases
within the hour!

See how the clear, sharp durable lines match the clarity of hand engraving. Lasting legibility from the RCA monogram to the end of the type-of-tube identification. Years from now, because of the long, satisfying service it gave him, some consumer will want to replace this tube. He'll wipe the grease and dust away and this whole impression will re-appear as clean-cut and easy to read as it is today.

Markem markings assure repeat business from satisfied users. Does your future enjoy this protection?

Why not ask us about marking methods for your products? Whatever the size, shape or substance, we have a method and the machine to mark it quickly, legibly, lastingly and economically.

Marking of parts for war-work production is especially important. It speeds assemblies. Stops mistakes.

Catalog G-2 on request

"Steel Shell Casings, 37 mm to 3 inches can be ink-marked with Markem equipment, 1,000 to 4,000 per hour."

MARKEM

VARIABLE DESIGNATION
MARKING MACHINES

BOXES, LABELS, TAGS, ENVELOPES, TICKETS, TAGS, LABELS FROM CONTINUOUS ROLLS, COLLARS, SOCKS, STOCKINGS, SHIRTS, SHOE LININGS, TEXTILES, LEATHERS, SYNTHETICS, GLASS, METAL, WOOD, PLASTICS, PRINTED SURFACES, RUBBER SHEETS - ABRASIVES.

SHAPE AND SUBSTANCE PRESENT NO PROBLEMS. There's a Markem machine to identify or decorate every part or product known to industry. And out of the Markem laboratories come special process inks, rotatable type wheels, special type bars or master printing plates so that Markem is the only source of supply you need for marking machines, devices and supplementary materials.

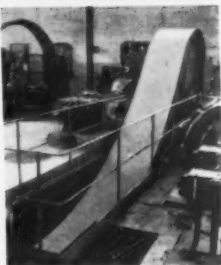
MARKEM
MACHINE COMPANY

KEENE N.H.

Builders of Industrial Ink Marking Equipment

You made 'em - Now MARKEM

Plenty of Endurance for 3 Shifts, 7 Days A Week



● With little care other than an occasional application of Rhoads' belt dressing, Tannate Leather Belts outpull and outlast ordinary belts . . . Grip tight . . . Run smoothly . . . Keep machines at constant high speed, with few letdowns for maintenance.

Tannate has high overload capacity. It is stronger than most first-quality oak belting. It resists high temperatures, water, machine oil and many chemicals. Pre-stretched, it needs far fewer shutdowns for take-up.

MORE PRODUCTION, WITHOUT MORE MACHINES, with

Let Tannate help keep your machines running at top speeds! You'll see production schedules take a turn upward; you'll get more uniform work, less spoilage, fewer shutdowns, reduced unit cost with Tannate. TRY IT!

RHOADS

Established
1702

Tannate
**WATERSHED
LEATHER BELTING**

J. E. RHOADS & SONS Established 1702

NEW YORK • CHICAGO • ATLANTA • CLEVELAND
35 North Sixth Street, Philadelphia, Pennsylvania

COURT UPHOLDS CANADIAN WARTIME REGULATIONS

The Canadian Supreme Court in recent rulings upheld Government wartime economic powers in two cases wherein it ruled controls over chemicals valid.

1 1 1

MACHINE TOOL EXHIBIT

AT MARCH ANNUAL OF A.S.T.E.

A machine and tool progress exhibition will be held in connection with the annual meeting of the American Society of Tool Engineers, to be held in Milwaukee March 25 to 27th. The exhibition will be in the Milwaukee Auditorium, and is being held primarily to promote equipment that bears directly on the immediate job of simplifying and expediting war production.

1 1 1

INDUSTRIAL ALCOHOL PRODUCTION

The Department of Agriculture, Washington, announces a three-way program to increase the production of industrial alcohol for war uses, with Commodity Credit Cor., flour millers and distillers cooperating. Preliminary experiments have shown that granular flour (free flouring, hard wheat flour) yields more alcohol than either corn or corn-wheat mixtures, and the plan provides for the sale of Government-owned wheat to flour millers for manufacture into granular flour for sale to distillers. Under the program 8,000,000 to 12,000,000 bushels of Government-owned wheat will be used during the first quarter of 1943, the quantity increasing during succeeding quarters until as much as 50,000,000 bushels may be used in this way.

ELI A. JENSEN

Eli A. Jensen, 47, Purchasing Agent, Treasurer and Business Manager of Wittenberg College, Springfield, Ohio, died in St. Louis, January 12th. He was stricken January 8th at the mid-winter meeting of the N.A.P.A. Executive Committee, which he was attending as Vice President for District No. 6. Rushed to the hospital, he was apparently well on the road to recovery when he succumbed to a sudden heart condition.

In addition to his work at Wittenberg College, where he held the rank of full professor and a place on the Board of Trustees, Mr. Jensen had given generously of his time and talents to civic and patriotic projects. He was a Past President of the Springfield Association of Purchasing Agents, a former State Commander of the American Legion, Ohio District, an active member of the Springfield Rotary Club, a member of the Educational Buyers Association, and on the Advisory Board of the First National Bank & Trust Company. For the past year he had been in charge of the complete Civilian Defense Program of his city.

His sudden and tragic death cut short a career that was already rich in accomplishment and brilliant with promise. A wide circle of his friends in purchasing join his college and his community in sorrow at his passing.

When writing advertisers please mention Purchasing

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*-and you thought
we couldn't do it?*

"Women in industry? . . . With all these heavy loads?" Tush!

Where's the need of a strong back? Why huff and puff and do yourself in? Electricity does all the heavy work here!

Handling materials in industry is the job of the P&H Zip-Lift. Now, it's merely a matter of pressing buttons to lift and lower heavy loads exactly where you want them. No trick to it, with such simple operation.

For any loads up to 2,000 lbs., Zip-Lifts are the practical answer for safe, speedy, and economical handling. Now is the time to modernize — for today's peak production and tomorrow's lower cost.

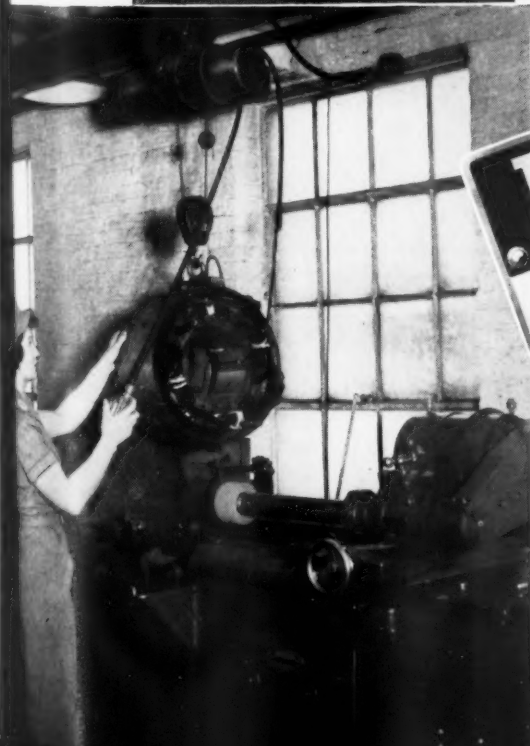


*A new star has been
added to P&H's award
for excellence in war
production.*

General Offices: 4577 W. National Ave., Milwaukee, Wis.

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CORPORATION
HOISTS • WELDING ELECTRODES • MOTORS • EXCAVATORS • ELECTRIC CRANES • ARC WELDERS

Available in 250, 500, 1000 and 2000-lb. capacities; with interchangeable mountings for bolt, hook, or trolley service. Just hang them up and plug into any standard lighting circuit. Ask for Bulletin H-20.



OAKITE WARTIME SERVICE IS AVAILABLE WITHOUT CHARGE

TO ANY PLANT WORKING ON WAR ORDERS

Nation-Wide
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Field Service Staff

Personal Help on ALL Your Degreasing Problems!

If you are facing NEW production degreasing, maintenance cleaning or plant sanitation problems, let Oakite Wartime Service **HELP YOU** quickly, economically find the **RIGHT ANSWERS!**

Whether or not you are using Oakite materials, you obtain without obligation, through the Nation-Wide Oakite

Field Staff, the competent, personal service of men trained in ALL phases of industrial cleaning. Moreover, the facilities of our Technical Laboratories are also **FREELY** available. Your inquiry invited, promptly answered.

OAKITE PRODUCTS, INC.

54 Thames Street, NEW YORK, N. Y.

Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE

SPECIALIZED CLEANING



**Victory's
One Step Nearer**

**FOR EVERY SHIPMENT
THAT REACHES THE FRONT**

Undamaged

Here are some of the ways Signode safeguards our fighting man's supplies:
REINFORCES Cartons, Boxes, etc.

To allow lighter weight, safe containers.
To reduce bulk for overseas and carload shipments.

PREVENTS PILFERAGE by the Signode Seal which cannot be resealed without showing evidence of tampering.

BRACING CARLOAD SHIPMENTS

Faster loading and unloading.
Saves weight and critical materials (lumber and nails).

Assures safe delivery of cars loaded to maximum capacity.

Signode representatives daily add to a shipping experience which is yours to draw on. Contact our nearby representative or write us.

SIGNODE STEEL STRAPPING CO.

2602 N. Western Ave., Chicago, Ill.

Brooklyn, N. Y.: 371 Furman St. San Francisco, Calif.: 454 Bryant St.

Representatives in Principal Cities of the United States and Canada

SIGNODE

**Signode Steel Strapping meets all
Federal strapping specifications**

When writing advertisers please mention Purchasing

THE SYNTHETIC RUBBER PROGRAM

The Rubber Reserve Company has signed contract with the National Synthetic Rubber Corporation for the operation of a new government-owned synthetic rubber plant to be built in Kentucky, according to announcement by Jesse H. Jones, Secretary of Commerce. The National Synthetic Rubber Corporation was formed for the specific purpose



**Dr. J. B. Oakes, Vice Pres. & Gen. Manager,
National Synthetic Rubber Corporation**

of operating the new plant, and is jointly owned by Goodall Rubber, Inc., and Hamilton Rubber Mfg. Co., both of Trenton, Hewitt Rubber Corp. of Buffalo, Lee Rubber and Tire Corp. of Conshohocken, Pa., and Minnesota Mining & Manufacturing Co. of St. Paul.

W. W. Banner of Lee Rubber & Tire is president of the new Corporation and Dr. J. B. Oakes of the Minnesota Mining & Mfg. Co. is executive vice president and general manager in charge of operations. Wm. M. Collins, Jr. of the same company is vice president and treasurer, and B. J. Moffatt of the Hewitt Company is a vice president.

Another Kentucky Plant in Operation

President John L. Collyer of the B. F. Goodrich Company, Akron, announces commencement of operations at a large scale government-financed synthetic rubber plant also in Kentucky. The plant will ultimately utilize butadiene made from alcohol and will shortly be in full scale production of general purpose synthetic rubber for war uses.

Mission to Russia

The American Rubber Mission to the Soviet Union, appointed by William M. Jeffers, Rubber Director, to investigate the Russian synthetic rubber industry, has left for Moscow.

Members of the Mission are Ernest W. Pittman, President of Interchemical Corporation, chairman; Dr. W. A. Gibbons, head of general development, United States Rubber Company; Dr. Aristide Von Grosse, scientist of Columbia University; and Irvin L. Murray, chemical engineer of Carbide and Carbon Chemicals Corporation.

To Operate Government Plant

Commerce Secretary Jesse Jones announces that the Rubber Reserve Company has made a contract with the Copolymer Corporation to operate a new Govern-

(Continued on page 176)

N-B-M NONFERROUS CASTINGS

IN ANY WEIGHT, SIZE AND QUANTITY



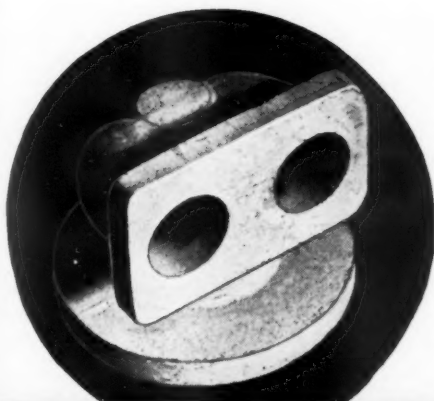
**GUN BRONZE • MANGANESE BRONZE •
PHOSPHOR BRONZE • ALUMINUM BRONZE
• HYDRAULIC BRONZE • LEAD BRONZE
ALSO LEAD AND COPPER CASTINGS**

and all other nonferrous alloys to government specifications.

We are equipped to serve you *within required delivery time.* Chemical analyses and physical tests can be furnished by our own laboratories.

For 69 years we have specialized in nonferrous castings of all kinds for industrial and transportation services.

N-B-M Pumpbody Castings • Electrode Castings • Structural Castings • Pressure Castings • Marine Castings • Valve Castings.



NATIONAL BEARING

METALS CORPORATION

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PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

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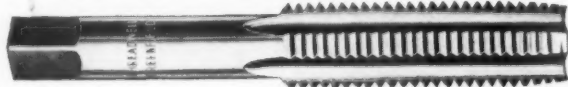
Your tap has outlasted any others which we have used

EXCERPT FROM CUSTOMER'S LETTER

A spinning finger of polished steel . . . cutting delicate chip curls . . . a thread is formed, accurate and true to the thousandth of an inch . . . dozens of threads, hundreds of threads, thousands of threads . . . a Threadwell Ground Thread Tap is setting new records for "holes per tap" somewhere on the production front.

In our files are dozens of recent letters of thanks that fall into two groups . . . letters from *purchasing* men in appreciation of the *personal attention* their orders for taps have received from Threadwell and its distributors, and letters from *production* men telling us how well our taps have performed in high speed tapping machines.

If your "bottle-neck" is threading tools, call on your Threadwell distributor. **THREADWELL TAP AND DIE COMPANY, GREENFIELD, MASS.**



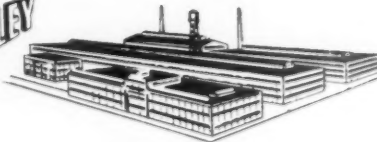
SALES AGENTS

Canada: Bridge Machinery Co., Montreal
England: Skylux Ltd., London

Threadwell
"TAPS OF DISTINCTION"

RIGHT DOWN OUR PRODUCTION ALLEY

We want WAR SUB-CONTRACT work!



We need work — you need help — let's get together.

Stewart has enormous manufacturing and ample shipping facilities for production runs of units or parts of units fabricated from angles, flats, tees, rounds, squares, sheets, strips, and plates involving the use of equipment listed at the right.

Stewart offers competent engineering service; on time deliveries; best workmanship and the highest financial rating obtainable. When writing, please send specifications and complete information.

PRODUCTION FACILITIES

Punch Presses • Shears
Power Brakes • Spot,
Arc and Gas Welders
Drill Presses • Bull
Dozer Forming Equipment
Automatic Saws • Heat
Treating Furnaces • Fin-
ishing Equipment • Tool
Room Equipment.

Stewart
FABRICATORS OF
IRON • STEEL • WIRE
ANGLES • FLATS • ROUNDS • SQUARES • TEES • STRIPS • SHEETS • PLATES

**THE STEWART
IRON WORKS CO. Inc.**
1961 STEWART BLOCK
CINCINNATI, OHIO

When writing advertisers please mention Purchasing

(Continued from page 174)

ment-owned synthetic rubber plant to be built in Louisiana by the Defense Plant Corporation, a subsidiary of the RFC. The seven independent American Rubber Companies participating in the ownership of the Copolymer Corporation are: Armstrong Rubber Co., The Dayton Rubber Mfg. Co., Gates Rubber Co., Lake Shore Tire & Rubber Co., Mansfield Tire & Rubber Co., Pennsylvania Rubber Co., and Sears Roebuck & Co. These companies will furnish the technical staff for the management of the plant.

1 1 1

FUTURE OF AIRCRAFT IN TRANSPORTATION

On long overland hauls, freight transportation by air would cost 35 times as much as transportation by rail, and on long haul ocean transport the airplane service would be 250 times the surface freighter's cost, according to W. A. Patterson, president, United Air Lines, who in an appraisal of "The Airplane in the Scheme of Post-War Transportation" before the National Industrial Conference Board in New York, stated that the "picture is being distorted perhaps in a harmful way by over-enthusiastic predictions of the influence of the airplane in the post-war world. Even though contemplated engineering advances plus a hundredfold increase in freight volume might reduce overall ton-mile costs from their present average of around 40 cents to levels somewhere in the neighborhood of 10 cents per ton mile, that figure is still many times the cost of surface transportation which measures its ton mile cost in mills." In the field of passenger travel, he said, the airplane may well take over a major share of the volume. However, an inanimate piece of cargo presents a different problem. "Here values per pound bear a much lower relationship to transportation costs. The time saved must be business time and it must be strictly worth the saving."

"The future of the airplane in commerce is indeed great, but it appears that this future can be realized without serious inroads upon the steamship lines or the railroads. The volume of domestic air cargo could increase one-hundred fold and yet capture only 1/10 of one percent of the freight ton miles now carried by American railroads."

1 1 1

SPURS EMPLOYEES TO BUY WAR BONDS



As an incentive to its employees to buy United States War Bonds, the Keystone Bolt & Nut Corporation, New York, at the instigation of President Irving J. Feldman inaugurated a plan whereby the company contributes \$3.75 toward the purchase price of each \$25. bond purchased by them. As a result Keystone employees responded 100% to the plan. The company recently celebrated its 20th anniversary as suppliers of bolts, nuts, rivets, washers and screws.

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**Untrained workers
need this warning:**
"CAREFUL!"
**—LIVES DEPEND
ON YOU"**

WITH millions of new people working to-day, the question of safety takes top rank on the home front. Observe how many more persons were killed and injured while working than in the fighting between Pearl Harbor and December 7 last:

"ON-THE-JOB" ACCIDENTS	U. S. ARMED FORCES
Dead.....19,000	Dead..... 8,192
Injured..... 1,700,000	Wounded & Missing 50,115
TOTAL 1,719,000	TOTAL 58,307



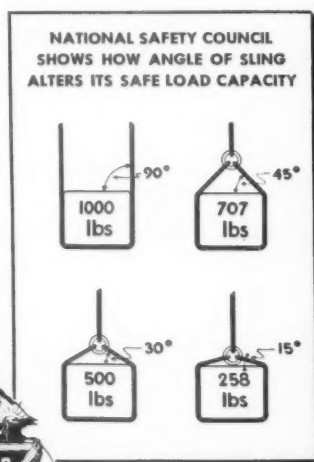
To reduce these "home front" casualties, the National Safety Council provides instructions for many industrial operations, such as lifting loads with sling chains.

We know the value of these suggestions because sling chains of all types and sizes are manufactured by the American Chain Division of American Chain & Cable. Our chains are proof-tested to deliver far beyond their rated capacities. But we know from long observation that accidents often occur

where a chain is improperly applied. So workers must be warned—particularly when they start on unfamiliar jobs.

Besides making welded and weldless chains of all types and sizes, we also manufacture many other products for Industry, Transportation and Agriculture, essential in peace, vital in war.

The American Chain & Cable Company is happy to cooperate with the National Safety Council in its nation-wide campaign to "Save Manpower for Warpower"—which is now being conducted at the request of President Roosevelt.

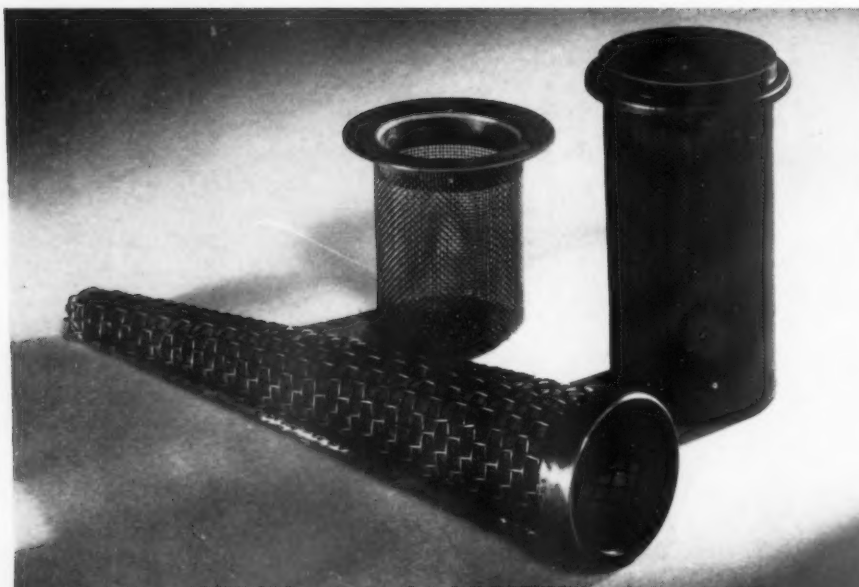


In Business for Your Safety

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT, CONNECTICUT In Canada—Dominion Chain Company, Ltd. • In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd.
Aircraft Controls, American Chain, American Cable Wire Rope, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley
Garage Equipment, Owen Springs, Page Fence and Welding Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists and Cranes

When writing American Chain & Cable Company, Inc. please mention Purchasing



We can still accept orders for JELLIFF FUEL STRAINERS and other fabricated mesh assemblies

We are shipping thousands now to manufacturers of airplanes and engines but have stepped up production so we can take more orders. Any type, coarse protecting mesh outside, fine mesh inside; single mesh; any metal, any shape, and mesh or weave. Send drawings and specifications for quotation and delivery.

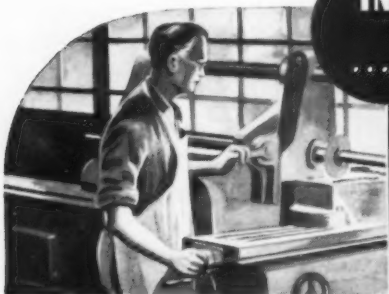
THE C. O. JELLIFF MFG. CORP.

22 Pequot Ave.

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IN EVERY DEPARTMENT

... convenience counts



Conveniences are as vital to maintaining increased production as the metals and machinery . . . conveniences which promote the comfort, health and safety of the worker! In this field Halsey Taylor Coolers and Fountains play a prominent role, with features that promote sanitation and health protection. Write for catalog.

The Halsey W. Taylor Co.
WARREN, OHIO



HALSEY TAYLOR
AUTOMATIC STREAM CONTROL • TWO-STREAM PROJECTOR
DRINKING FOUNTAINS

WAREHOUSES PERMITTED TO REBUILD IRON & STEEL STOCKS

To enable Iron and Steel warehouses to rebuild their stocks, a system of temporary supplementary quotas has been announced. The new amendment permits a warehouse to exceed its quota for the first quarter of 1943, provided that it keeps within its total allotment for the period January 1, 1943 through March 31, 1943.

Supplementary order controlling the use and distribution of Aluminum Paints, Pigments and Liquids (scheduled to expire December 31) has been extended indefinitely.

1 1 1

AUTHORIZED TO ISSUE PREFERENCE RATINGS ON EMERGENCY REPAIRS

A further step toward decentralization of the War Production Board was taken with the granting of increased authority for approval of individual emergency preference ratings to the field offices of WPB.

The 12 regional Directors of WPB are now authorized to approve, countersign, and issue individual preference ratings for emergency repair, up to and including AA-1, in accordance with specific instructions to be issued from time to time by the Deputy Director General for Distribution. Regional Directors may authorize the Deputy Directors to perform these functions.

In addition, the 110 district offices may for the first time grant ratings for emergency repair, up to and including AA-2.

The authority delegated is limited to cases where the material for which the applicant seeks priority assistance does not exceed \$500 in value.

1 1 1

LIVING STANDARDS DEPEND UPON FORTUNES OF WAR

The War Production Board has warned America's 130,000,000 citizens that the level of their standard of living in 1943 will depend to a large extent upon the fortunes of war. The "bedrock" civilian economy, however, will not be reached this year, it said, except in the so-called durable goods, such as automobiles, radios, washing machines, etc., the production of which has ceased.

The purchase of all types of consumer goods and services in 1943 is expected to drop 10% to 15% below the 1942 level, while production of goods and services will decline 15% to 20%. The deficiency in goods will be made up from inventories which were accumulated before all-out war production was adopted after Pearl Harbor.

The biggest drop in sales is estimated in electrical appliances, radios, etc., continuing the trend which set in last year as a result of WPB limitations orders on production. As an example WPB cited the fact that almost 20,000,000 tons of steel were used in consumer durable goods in 1940. The 1943 estimated total is estimated at only 1,500,000 tons.

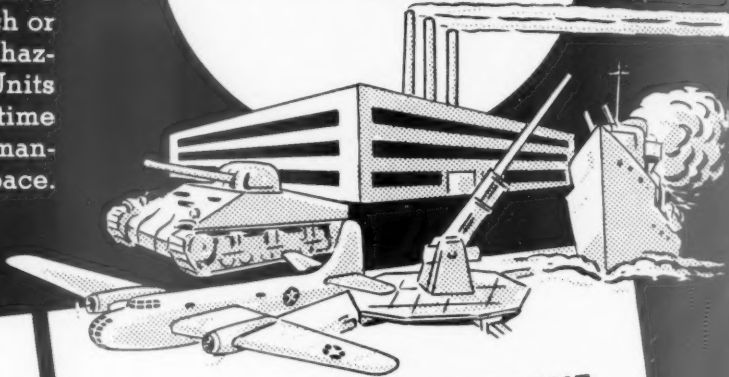
Civilian expenditures for services, including transportation, recreation and personal services are likely to be about the same as 1942, or slightly higher.

When writing advertisers please mention Purchasing

LYON TIME SAVERS

● By using Lyon Shop Equipment and Lyon Storage Equipment, war plants are speeding up the handling of tools and parts . . . are providing the protection the employees, their tools and parts deserve. Lyon Materials Handling Containers, for example, reduce time and cost of transporting small parts, save floor space, speed handling at bench or machine, reduce fire and accident hazards. Other Lyon Shop and Storage Units are all engineered to help meet wartime production schedules by saving man-hours, machine hours and floor space. Write for Catalogs.

For
**WAR
PRODUCTION**



LYON SHOP EQUIPMENT



3-Shift Work Bench



Tool Cases



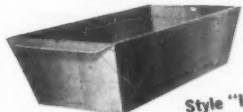
Bench Legs



Tool Boxes



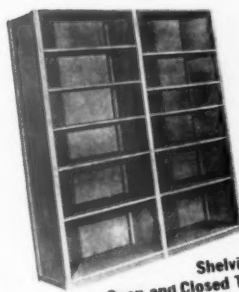
Style "W"
Stacking Materials
Handling Containers



Style "L"
Nesting Materials
Handling Containers

LYON STORAGE EQUIPMENT

Engineered in Wood for the Duration



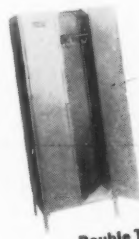
Shelving—
Open and Closed Types
(Pat. Applied For)



Storage, Wardrobe and
Combination Cabinets



Shoprobe
(Pat. No. 2-202-427)



Single and
Double Tier Lockers

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METAL PRODUCTS, INCORPORATED

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Branches and Distributors in All Principal Cities

LYON METAL PRODUCTS, INCORPORATED
3302 Madison Ave., Aurora, Ill.

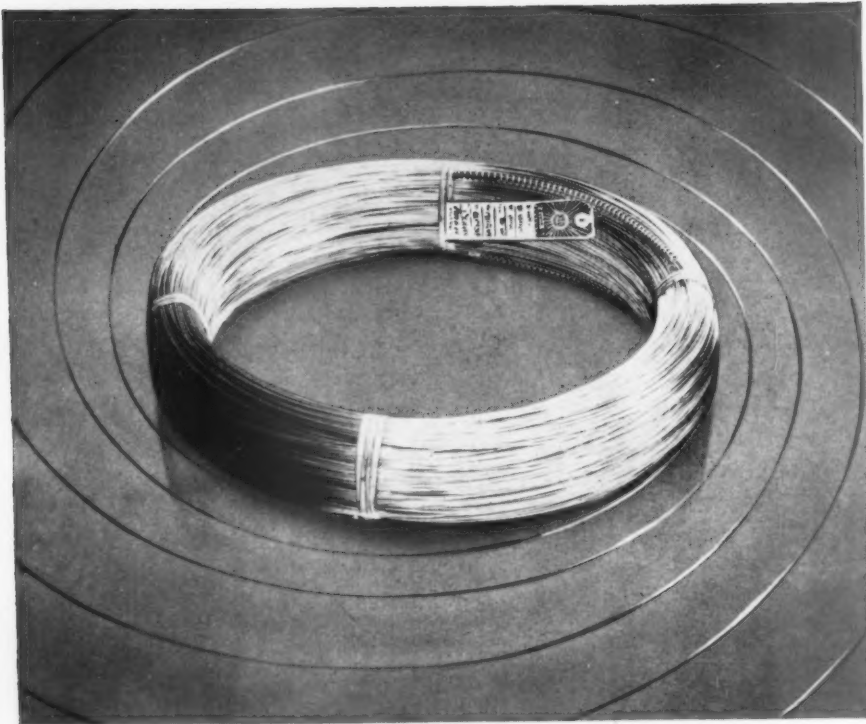
Send ☐ Lyon Shop Equipment Catalog;
☐ Lyon Storage Equipment Catalog.

Name _____

Address _____

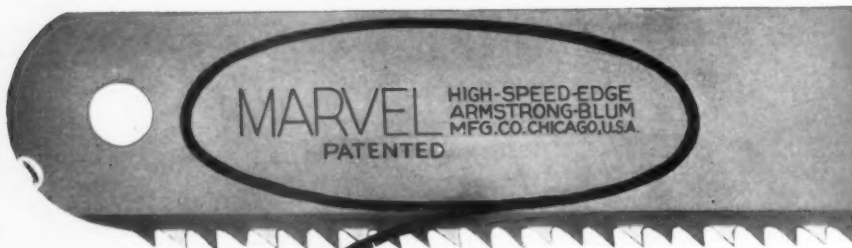
City _____ State _____

When writing Lyon Metal Products, Incorporated please mention Purchasing



MUSIC WIRE. Conforming to Government specifications
(WD 1085-WD 1095) Stock Sizes .004" to .180" dia.

JOHNSON STEEL & WIRE CO., INC.
WORCESTER * MASSACHUSETTS.
NEW YORK AKRON LOS ANGELES



Purchasing Agents Too Can Speed Production

By standardizing on these *Positively Unbreakable* hack saw blades that permit all hack sawing machines to operate at maximum speed and maximum feed, you can increase the output of every hack saw in your plant. In **MARVEL High-Speed-Edge Hack Saw Blades** the fastest cutting, longest lasting cutting edge has been welded to a body of tough alloy steel. This composite construction gives strength to stand up to any load, and assures that each blade will last the full life of its cutting edge. Buy **MARVEL High-Speed-Edge Hack Saw Blades** from your local industrial distributor.

ARMSTRONG-BLUM Mfg. Co.

"The Hack Saw People"

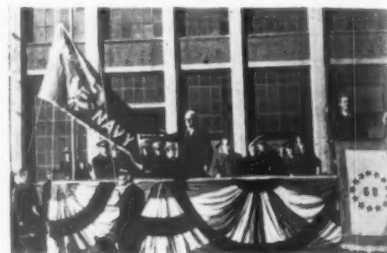
5700 Bloomingdale Ave., Chicago, U. S. A.
Eastern Sales Office: 225 LaFayette St., New York



When writing advertisers please mention Purchasing

GARCO AWARDED "E" BURGEE

The Army-Navy "E" pennant and "E" pins were awarded to the General Asbestos & Rubber Division of Raybestos-Manhattan, Inc., North Charleston, S. C., and its employees, at colorful ceremonies



Army-Navy "E" Burgee Presentation Ceremonies, General Asbestos & Rubber Div., Raybestos-Manhattan, Inc.

presided over by Hon. L. Mendel Rivers, Representative from South Carolina. Admiral Cluverius presented the pennant to Executive Vice President Rohrbach, and Col. Barnwell of the Army awarded the "E" pins to Dan Legare, an employee for 39 years. The Charleston Navy Yard band furnished the music for this "Well-Done" celebration.

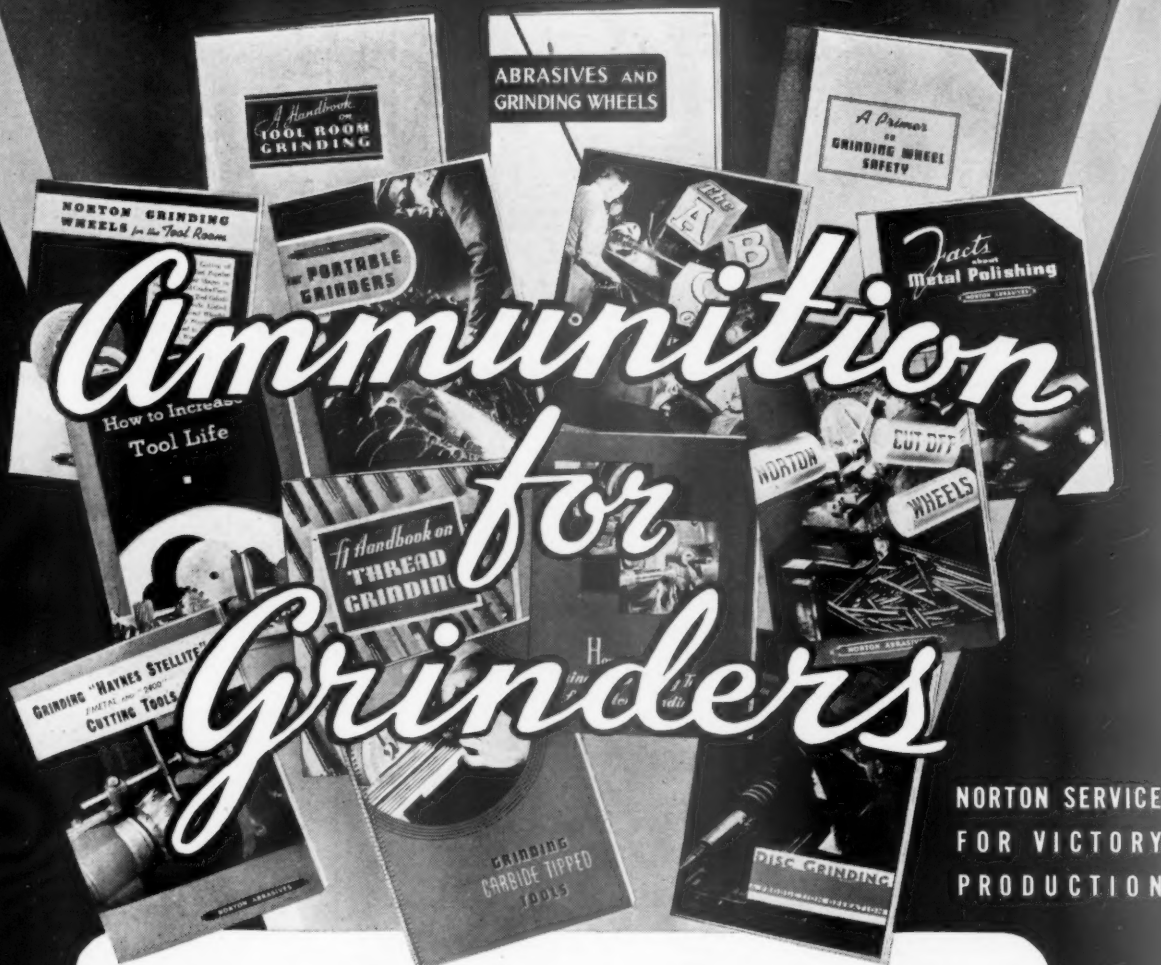
H. K. Porter, Inc., Everett, Mass., manufacturers of metal cutting tools, and its employees took part in elaborate ceremonies January 12, at which Col. W. A. Moyle of the U. S. Army presented the Army-Navy "E" pennant to the company, and Capt. John J. Hyland of the U. S. Navy gave "E" pins to the employees. The gathering was addressed by Governor Saltonstall, and the Hon. Sumner Whittier, Mass. State Senator, officiated as master of ceremonies.

The S. G. Taylor Chain Co., Hammond, Ind., manufacturers of load and tire chains has been awarded the Army-Navy "E" burgee, the pennant being presented to President E. Winthrop Taylor by Rear Admiral W. C. Watts, and the employees were presented with "E" pins at recent ceremonies. Music for the occasion was provided by the U. S. Navy Band of the Chicago Navy Pier.

The H. M. Harper Co., Chicago, manufacturers of non-ferrous and stainless alloy fastenings, was awarded the Army-Navy "E" pennant at recent ceremonies with Lieutenant Commander Carl H. Soderstrom, Assistant to Inspector of Naval Material, Chicago, as master of ceremonies. Lapel insignia were presented to the employees by Capt. J. A. Roesch, Assistant to Chief of Ammunition Branch, Chicago Ordnance District.

The American Optical Company, Southbridge, Mass., and its employees are also among recent recipients of the "E" pennant and "E" pins. Presentation of the former was by Brig. Gen. Burton O. Lewis, District Chief, Boston Ordnance Division, President George B. Wells accepting the award on behalf of the company. The lapel pins were presented by Capt. J. J. Hyland, U.S.N. (retired), Inspector of Navy Material, Boston Dis-

(Continued on page 182)



NORTON SERVICE
FOR VICTORY
PRODUCTION

Your factory's grinding problem may be with the carbide tipped tools

- or precision grinding of the cylindrical type
- or surface grinding
- or internal grinding

Printed information on these subjects is a part of Norton Service — along with motion picture instruction, training courses and engineering service.

All these types of service are available wherever needed.

What subject covered by any of the above booklets is bothering you now?



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LOWELL
SAFETY-STEEL
WRENCH

THE
SAFE AND SURE
REVERSIBLE
RATCHET THAT
WILL SAVE
TIME AND
MONEY

A New Handle for
any broken one
returned

MANUFACTURED BY
LOWELL WRENCH COMPANY
Worcester, Mass., U. S. A.

(Continued from page 180)

trict. Governor Leverett Saltonstall addressed the gathering at the ceremonies.

The Monsanto Chemical Company, St. Louis, Mo., has with the awarding of the joint Army-Navy "E" symbols for fine record in production of war equipment, to its Monsanto, Ill. and St. Louis, Mo. plants, received a total of 15 such honors. Several of the company's units are recipients of the All-Navy "E" award, and three joint Army-Navy "E" awards for continued achievement have been received.

The Hercules Motors Corporation and its employees, Canton, Ohio, at a presentation on January 11, received the Army-Navy "E" pennant and employee pins.

The Reliance Electric & Engineering Co., Cleveland, Ohio, recently added to



Renewal Star is added to Navy "E" Pennant of The Reliance Electric & Engineering Co., Cleveland.

its Navy "E" pennant, a star signifying that the award was renewed after six months of continued outstanding war work.

The Broderick & Bascom Rope Company, St. Louis, Mo., one of the first companies to receive the coveted Army-Navy "E" and its employees have won a renewal star extending the honor for another six months, the renewal star being affixed to a new joint service flag presented at brief renewal ceremonies.

The Dunkirk, N. Y. plant of the American Locomotive Company, has received the U. S. Maritime Commission's "M" pennant and labor merit badges for excellence of production in supplying masts and king-posts to the Maritime Commission, for Liberty ships.

Three plants of the Fairbanks, Morse & Co., and their employees, namely at Freeport, Ill., Beloit, Wis., and Three Rivers, Michigan, were awarded the Army-Navy "E" emblem and employee merit pins at fitting ceremonies last month.

1 1 1

NAVY SAVES RUBBER BY SUBSTITUTION

By substituting less critical materials, the Navy has already reduced the amount of rubber required in the construction of combat vessels to one-half the normal allotments before December 7, 1942. Similar drastic curtailments in the use of rubber have been made in other items of Naval equipment, such as gas masks. Despite the fact that the Navy's building program is greatly expanded, 35% less rubber is being consumed than in the pre-war program of 1941.



When you think of TRIPLEX, think of precision made threaded fasteners. This message is confined to our cap screws, Hex and Flat. If you want dependable quality and prompt service backed with a 23 year reputation, tie up with TRIPLEX now! We recommend your inquiry today.

THE TRIPLEX SCREW CO., 5331 Grant Ave., Cleveland, Ohio

TRIPLEX CAP AND SET SCREWS
BOLTS, NUTS AND RIVETS
Millions Sold •• Used in Every Industry

When writing advertisers please mention Purchasing

THREE WAGNER PRODUCTS that will speed your War Production

You can be assured of reliable performance, low maintenance and continuity of service in your "all-out" production efforts by specifying Wagner for all your motor, transformer and bridge-brake needs. You can depend upon Wagner too, because Wagner's large, modern plant is operating day and night to meet the demands for these items — products that have proved their efficiency and dependability through 50 years of faithful service to industry.



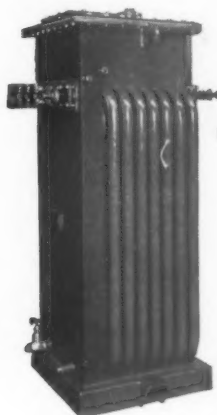
MOTORS



Type RP Polyphase
Squirrel-Cage Motor.

Wagner motors are built in a wide range of types and sizes with electrical and mechanical characteristics to fit the requirements of all types of motor-driven machinery and equipment. Bulletins MU-176, MU-182 and MU-183 illustrate and describe the complete line of Wagner motors. Everyone responsible for the purchase and maintenance of motors should have these bulletins.

TRANSFORMERS



Noflamol Transformer,
(Non-Inflammable
Liquid Filled.)

No matter what the requirements may be, Wagner can furnish the right transformer for the job. The Wagner line of transformers include power, distribution, and Noflamol transformers, and constant-current regulators. Bulletins TU-180 and TU-181 give complete information on the complete line. These bulletins contain information valuable to every transformer user.

BRIDGE BRAKES



Type H Hydraulic
Bridge Brake.

Today, Wagner bridge brakes are standard equipment on most overhead cranes. Wagner bridge brakes are available in type H for inside cranes, and type HM for outside cranes where automatic parking attachment is desirable. You should have bulletin IU-20. It will be mailed you on request.

Field Engineering Service!



Wagner has 25 sales and service branches located throughout the country. Trained field engineers are always ready to assist you in selecting motors, transformers, or hydraulic bridge brakes, to meet your particular requirements.

Wagner Electric Corporation

6400 Plymouth Avenue, Saint Louis, Mo. U.S.A.

Gentlemen:

P E43-1

I would like to have free copies of motor bulletins MU-176, MU-182, and MU-183 ☐. Transformer bulletins TU-180 and TU-181 ☐. Hydraulic bridge brake bulletin IU-20 ☐.

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Company _____

City _____ State _____

MOTORS • TRANSFORMERS • BRIDGE BRAKES

When writing Wagner Electric Corporation please mention Purchasing

BEARING LOCKNUTS
N 00 TO AN 40
★
STANDARD
★
HEAVY DUTY
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SPECIAL
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**Vital Links in
modern Production**

**ALLIED MACHINE &
ENGINEERING CORP.**
NEW PHILADELPHIA, OHIO

FORTY-THREE STEPS OF CONTROL


in four inches!

ARMY **E** NAVY

The new Ward Leonard 4-inch Pressed Steel Rheostat offers the happy combination of a small sturdy power rheostat with a large number of steps and ample current carrying capacity. Like all Ward Leonard Pressed Steel Rheostats this model may be arranged for front of board, rear of board and multiple assembly mounting. Other types and sizes also available. Send for descriptive bulletins.

WARD LEONARD

RELAYS • RESISTORS • RHEOSTATS

Electric control  devices since 1892.

WARD LEONARD ELECTRIC CO., 50 SOUTH STREET, MOUNT VERNON, NEW YORK

When writing advertisers please mention Purchasing

AMONG THE PEOPLE YOU BUY FROM

William C. Carter is the new president of the Link-Belt Company, Chicago. He succeeds Alfred Kauffman who resigned because of ill health.

R. E. McDonald succeeds R. B. Voelker as advertising manager of the Dumore Company, Racine Wis., who has joined Uncle Sam's forces.

R. W. Beard, formerly in charge of the GE Federal and Marine Program, San Francisco, has been made assistant to the manager of the company's Lighting Division in Schenectady, N. Y.



Wm. C. Carter, new President of the Link-Belt Company, Chicago

E. G. Hartmann has been promoted to assistant general manager of sales, John A. Roebling's Sons Company, Trenton, N. J., and Douglas W. Vernon, formerly chief of the company's priorities division, has been made assistant to the general manager of sales.

W. I. Galliher has been appointed executive sales manager of the Columbia Chemical Division, Pittsburgh Plate Glass Company, Grant Building Pittsburgh. He succeeds Eli Winkler who is retained in the capacity of Executive Consultant.

W. W. Noble has been appointed manager of the Crucible Steel Company's Pittsburgh Branch Sales Office. Former manager J. S. Billingsley was recently made manager of the Order and Scheduling Department in the New York executive offices.

Walter M. Dick, treasurer of the Westinghouse Electric Supply Company, retired the first of the year after forty years' of service.

(Continued on page 186)

Cut Recruit Training Period of Your Screw Driver Army



ANYONE CAN DRIVE PHILLIPS SCREWS!

In many of today's war-expanded plants, *raw recruits* now literally walk from the employment office into responsible screw-driving jobs previously rated as skilled work. They produce efficiently, too, because the job is simplified and made fool-proof by Phillips recessed head Screws.

The Phillips driver centers *automatically* in the recess... can't slip out to injure hands or spoil the work. This means centered *driving force*... no fumbling, wobbly starts... no slant-driven screws

... no burred or broken screw heads.

Snug fit and perfect centering of driver in the Phillips Recess enable workers to make *uniformly tight* fastenings... and do it with *less effort*. Driving speed is often *doubled* because easy-driving, skid-proof Phillips recessed head Screws make power-driving practical!

They cost less to use! Compare the cost of driving Phillips and slotted head screws. You'll find that the price of screws is a minor item in your total fastening expense... that it actually costs less to have the many advantages of the Phillips Recess!

KEY TO FASTENING SPEED AND ECONOMY

The Phillips Recessed Head was scientifically engineered to afford:

Fast Starting - Driver point automatically centers in the recess... fits snugly. Screw and driver "become one unit." Fumbling, wobbly starts are eliminated.

Faster Driving - Spiral and power driving are made practical. Driver won't slip out of recess to injure workers or spoil material. (Average time saving is 50%.)

Easier Driving - Turning power is fully utilized by automatic centering of driver in screw head. Workers maintain speed without tiring.

Better Fastenings - Screws are set-up uniformly tight, without burring or breaking heads. A stronger, neater job results.



PHILLIPS *Recessed Head* SCREWS

WOOD SCREWS • MACHINE SCREWS • SELF-TAPPING SCREWS • STOVE BOLTS

21 SOURCES

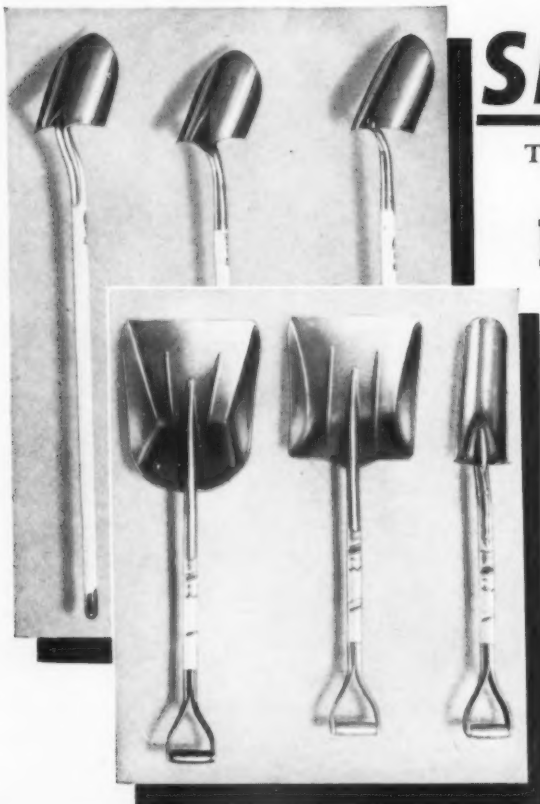
American Screw Co., Providence, R. I.
The Bristol Co., Waterbury, Conn.
Central Screw Co., Chicago, Ill.
Chandler Products Corp., Cleveland, Ohio
Continental Screw Co., New Bedford, Mass.
The Corbin Screw Corp., New Britain, Conn.
The H. M. Harper Co., Chicago, Ill.

International Screw Co., Detroit, Mich.
The Lamson & Sessions Co., Cleveland, Ohio
The National Screw & Mfg. Co., Cleveland, Ohio
New England Screw Co., Keene, N. H.
The Charles Parker Co., Meriden, Conn.
Parker-Kalon Corp., New York, N. Y.
Pawtucket Screw Co., Pawtucket, R. I.

Russell Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.
Reading Screw Co., Norristown, Pa.
Pheoli Manufacturing Co., Chicago, Ill.
Sevill Manufacturing Co., Waterville, Conn.
Shakeproof Inc., Chicago, Ill.
The Southington Hardware Mfg. Co., Southington, Conn.
Whitney Screw Corp., Nashua, N. H.

All Types and Grades.
Round or Square
Points. Plain or Pol-
ished.

A "Good Buy" in Shovels



That's what you get when you
specify...

INGERSOLL SHOVELS

One reason they are such a
"good buy" is that their
blades are made of TEM-
CROSS Steel — guaranteed
not to split at the blade
edges. You get this extra
value and better service with-
out paying a premium for it.

So whenever you order Shovels,
be sure to specify "Ingersoll" —
"A Borg-Warner Product."

Ingersoll Steel & Disc Division
Borg-Warner Corporation
New Castle, Indiana

Plants: New Castle, Ind.; Chicago,
Ill. Kalamazoo, Mich.

(Continued from page 184)

Dr. H. A. Jones, manager of sales of
G. E. electronic tubes for non-radio ap-
plications, has been commissioned a Lieu-
tenant Colonel in the U. S. Army Signal
Corps.

R. A. Maxwell of the War Products
Department of the B. F. Goodrich Na-
tional Sales and Service Division, has
gone into government service as a mem-
ber of the requirements and capacities
section, rubber branch, of the War Pro-
duction Board.

Irving F. Pohlmeier, west coast sales
and service engineer, The Ohio Seamless
Tube Co., Shelby, Ohio, is now located
at 170 South Beverly Drive, Beverly
Hills, Calif.

A. R. Abelt, secretary of the Chain Belt
Company, was recently made a director
and also a vice president of the company.

J. W. Belanger, has been appointed
manager of the General Electric Com-
pany's Federal & Marine Department,
succeeding D. W. Niven who will continue
as a consultant.

John H. Romann, chief metallurgist of
Tube Turns, Louisville, Ky., is chairman
of a committee to conduct a nation-wide
investigation in industrial plants on the
low temperature properties of metals. The
research is being carried on for the War
Department by the War Metallurgy Com-
mittee of the National Research Council,
Nat. Academy of Sciences, Washington.

Albert C. Delmont has been appointed
research director of the Douglas T. Ster-
ling Co., management consultants, Stam-
ford, Conn.

John A. Ross has been appointed man-
ager of the Crucible Steel Company of
America's Alloy Sales Department, New
York.

L. W. Taylor has been made sales man-
ager, Outside Construction Department,
Graybar Electric Co., New York, vice D.
C. Guest who retired the first of the year.

Glenn A. Harshbarger has been pro-
moted from captain to major in the
Quartermaster Corps, being executive offi-
cer of the quartermaster section of the
Second Air Service Area Command.
In civilian life Major Harshbarger was
office manager of the Frank E. Witte
Co., California sales representative for
the Baker Industrial Truck Div., Baker
Raulang Co., Cleveland.

Roger W. Allen, District sales engi-
neer, Foxboro Co., Atlanta, Ga., has been
named southeastern district manager for
Wheelco Instrument Co., Chicago, with
headquarters in Atlanta.

L. W. Hutchins, president of Sheldon,
Morse, Hutchins & Easton, Inc., and di-
rector of Safety Research Institute, Inc.
New York, has been appointed chief of the
newly organized Education Unit, Fire De-
fense Section, U. S. Office of Civilian De-
fense.

(Continued on page 188)

NUTS

S
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CLARK

PRODUCTS

PLAY A VITAL PART IN
OUR DEFENSE PROGRAM

Fast on the assembly line—

Tough where they have to be,
and

Kind to the hands that handle
them.

Send for our latest
catalog

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CLARK BROS BOLT CO.

CONN.

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*Thanks
A Million!*



...YOU HELPED US WIN IT

Without your help, we could not have gained the high honor of the Army-Navy "E" production award. Your co-operation permitted us to produce the valves it took.

More than 3,000 go into every battleship. How many do you think are needed to build America's *two-ocean* Navy? The ever-growing Liberty maritime fleet? How many thousands more for barracks, cantonments, and plants turning out Army equipment?

Doubled and re-doubled were our facilities beginning even before the war. Yet, only because you helped, were we able to meet the vast demands for Crane valves.

You made that possible by conserving the valves installed in your lines—by giving them the best of care—by "*making them do*" in the face of critical materials shortages. And most likely, as so many plants are doing, by utilizing the valuable tips in Crane "Piping Pointers" Bulletins on getting better and longer service from piping equipment.

As a result, on both industrial and fighting fronts, more and more Crane valves are today quickening the pace of America's march to Victory—assuring dependable flow control of every vital fluid.

And here at Crane, the Army-Navy "E" is spurring us on in making even more valves—helping us get our part and your part of this wartime job done faster.

Crane Co., 836 South Michigan Ave., Chicago, Illinois



"Piping Pointers" Bulletins—one of Crane Co.'s wartime aids to industry for getting better and longer service from valves. Supplied free on request.

CRANE VALVES

PLAY SAFE



Hold it in a Parker Vise!

Too often when work slips in a vise it means a reject . . . man-hours wasted, critical materials spoiled. Wherever you find careful expensive work in process you will usually find Parker Vises on the job. They are assembled to precision fits, there is

no "slack" to take up in gripping or releasing. Pinned-on tool steel jaws cover the top of the vise . . . resist wear . . . are easily renewable. The Charles Parker Company, Meriden, Conn., U. S. A.

PARKER VISES



AMERICA'S OLDEST

**Here—Millions of
BOLTS-NUTS-SCREWS
for Defense—**

These are the products you can use on production job after production job with the assurance that General Screw Manufacturing Company products will help you standardize, with uniformity, for economy and speed in production.

**GENERAL SCREW
MANUFACTURING CO.**
1234 W. MONROE ST. CHICAGO, ILL.

BUY

Spartan

**HACK SAWS
AND
BAND SAWS**

TO CUT YOUR METAL

STOCKED BY DISTRIBUTORS EVERYWHERE

SPARTAN SAW WORKS, SPRINGFIELD, MASS.

(Continued from page 186)

Power Machinery Co., Tulsa, Okla., is now sales representative in Oklahoma and Western Arkansas, of the Blackmer Pump Co., Grand Rapids, Mich.

Century Electric Company, St. Louis, Mo., recently served as host to a group of Latin-American engineers studying the methods of the Rural Electrification Committee.

Walter H. Gebhart has been appointed domestic sales manager of Henry Disston & Sons, Inc., Philadelphia.

Robert H. Bishop, formerly Eastern sales manager of the Lighting Division, Sylvania Electric Products, Inc., has been elevated to the post of general sales manager for that division, vice Charles G. Pyle who resigned to become managing director of NEWA. Mr. Bishop will office in New York.

GUY R. WASHINGTON

Announcement is made by the T. B. Wood's Sons Company, Chambersburg, Pa., of the sudden death of Guy R. Washington, assistant sales and advertising manager. Mr. Washington, whose demise occurred December 22nd, had been with the company 35 years.

SAVES TIME IN BRAZING OPERATION ON WAR GOODS

High frequency induction heat, used in a brazing operation on certain parts for war goods being produced at a General Electric plant in the east, has reduced the time for the operation from four minutes to forty seconds, and has eliminated the need for highly skilled workers to perform the work.

"The brazing operation was previously done with torches," explains J. P. Jordan, of the G-E Radio, Television and Electronics Dept. "Because a high quality joint was needed, only highly skilled workers could be used. Great care had to be taken not only during the operation, but also in its inspection. The average time per joint was about four minutes. With the application of electronic high frequency induction heat, the time required for the operation has been reduced to forty seconds. Women operators are now used, a uniform joint is achieved and, because of uniformity, inspection of this operation is eliminated."

There are many brazing and soldering operations now performed by other methods which could be done faster and better by high frequency induction heat, Mr. Jordan points out.

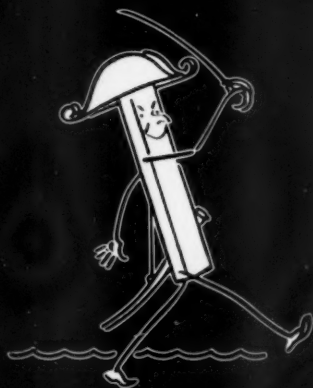
"Induction heat can best be explained by likening it to the radiant heat from the sun," he explains. "The sun's rays pass through space with little loss, yet when they strike a dark body the surface is heated. In like manner, the high frequency pulsating magnetic waves, radiated from the induction heater coil, pass through all insulating materials with little loss, yet create heat when they strike any metallic body. In use, the part to be heated is

(Continued on page 190)

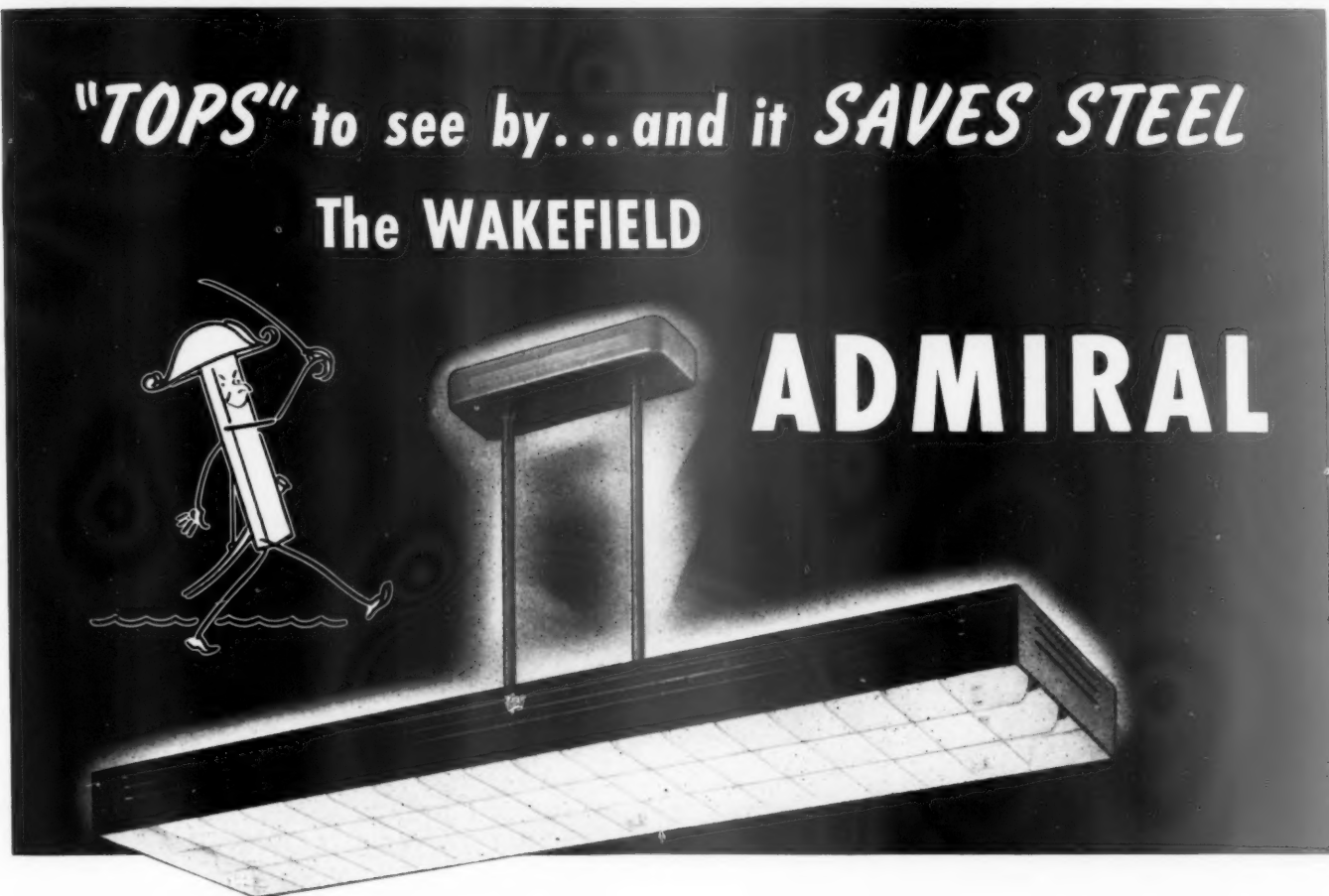
When writing advertisers please mention Purchasing

"TOPS" to see by... and it SAVES STEEL

The WAKEFIELD



ADMIRAL



For war plant office and drafting room

Designed to conserve war materials, the new Wakefield ADMIRAL brings you a fluorescent fixture of wood . . . *planned for today's office needs!*

It provides diffused, high-intensity lighting that helps office people handle essential paperwork faster, from record-keeping to drafting; and helps keep them at top efficiency longer, with less eyestrain and fatigue. And it saves almost enough steel on each 4-lamp unit to make a .30 calibre machine gun.

The Admiral puts 90% of its light down on desk-tops or boards; allows the rest to go upward to avoid ceiling contrasts. This makes it especially effective for work that involves critical seeing or for office space with poor ceilings.

The steel-saving frame and louvers of this new fixture are made by expert craftsmen

from carefully selected, first-grade wood; the frame is finished in beautiful walnut. Wooden pieces are anchored with metal and cemented with glue to withstand temperature and humidity changes. Masonite reflector, and V-shaped deflector between each pair of lamps, are unusually efficient . . . thanks to two coats of infra-red enamel over one coat of primer.

Perhaps the ADMIRAL can help speed *your* war production by speeding paperwork. Comes in 2, 3, 4 and 6-lamp units, which can be interconnected, on special order. Write for details.

For light in shop areas get the details on the Wakefield PACEMAKER. Uses minimum of steel, at no sacrifice in lighting. Special finish on surface of non-ferrous reflector retains its high efficiency after repeated washings. A Certified Fleur-O-Lier.

THE F. W. WAKEFIELD BRASS COMPANY

23 BIRCH PARK, VERMILION, OHIO

When writing The F. W. Wakefield Brass Co. please mention Purchasing



This KNIFE and FORK May Be Needed By Your Machinists

A Knife File and a Fork File . . . Swiss-Pattern . . . each have many applications in tool room and machine shop.

They are two of the many different shapes of "American Swiss" Files . . . the Swiss-Pattern line made by specialists with more than 40 years of experience. "American Swiss" Files are widely preferred by toolmakers and machinists for intricate and accurate filing jobs because their uniform hardness and clean sharp teeth make them last longer and do better work. Users report that these precision tools cut filing costs by 25% and more.



EVERY PURCHASING DEPARTMENT should have a copy of the "American Swiss" File catalog . . . contains complete descriptions, dimensions and lists of Swiss-Pattern Files for all purposes. Write for your copy.

American Swiss File & Tool Co.
Elizabeth, New Jersey



AMERICAN SWISS SWISS PATTERN FILES

(Continued from page 188)

placed in a water-cooled, copper tubing coil and current is passed through the coil at frequencies in the order of 500,000 cycles per second. This current generates the pulsating magnetic field which heats the part. The intervening air, or parts of the human body which may be in the magnetic field, are not affected."

ELECTROLYTIC TINNING SAVES TIN AND ASSURES UNIFORMITY

The United States is a "have not" nation insofar as tin is concerned. Normally, this country consumed a third of the world's total output of that metal while producing virtually none of it. In 1939, less than 40 tons of tin were mined in the United States and none was smelted. The remainder of the world mined 172,000 long (2,240 pounds) tons, of which we used 73,000 tons. The Japanese have gained control of the source of two-thirds of the world's tin, creating a serious war problem for the United States.

Steps were taken by government and industry to conserve the nation's tin stockpile. The most important measures applied to its use as tin plate because it consumed three times as much tin as any other single product.

Tin plate requirements in 1943 will take approximately 16,000 tons less tin than in 1941, a 40 per cent decrease. It is no longer available for packing dog food, beer, peanuts and other products which can be put in containers made of other materials. Small size cans were eliminated. Oil and various liquids now come in cans made of lacquered black iron or terne-plate (steel strip with a coating four parts lead and one part tin) and other containers.

The next attack on the tin problem was aimed at reducing the amount of tin used in plating steel. Tin plate made by dipping steel sheets into molten tin ordinarily takes one and one-half pounds of tin for every 100 pounds of steel but a government order restricted this to one and one-quarter pounds.

The electrolytic tinning method requires
(Continued on page 192)

PURCHASING AGENT—Desires to make a change. Now established in the Detroit, Michigan, area with ten years past experience as General Purchasing Agent. Capable of installing complete Purchasing Procedure. Available March 1, 1943. Write Box #942 PURCHASING, 205 East 42nd St., New York, N. Y.

EXPEDITING SERVICE: Man established in Pittsburgh 15 years, with wide acquaintanceship and broad knowledge of practice in the steel industry, gained over years of personal contacts as a buyer of steel products, offers his services to a limited number of firms as an on-the-ground representative to expedite deliveries and to aid in locating supplies. References of the highest character furnished. Write Box #943, PURCHASING, 205 East 42nd Street, New York, N. Y.

Don't let the
**SHORTAGE of
MAN POWER**
floor you!



Use **LONGER-LASTING**

CAR-NA-VAR
THE PERFECT FLOOR TREATMENT

CAR-NA-LAC
LACQUER-LIKE FLOOR FINISH

CAR-NA-SEAL
WEARS LIKE LEATHER

ON YOUR FLOORS!

We can't tell you where to get more men... but we definitely can show you how to get along with a lot less when it comes to keeping your floors in tip-top condition. Just use longer-lasting Car-Na-Var floor treatments.

True, Car-Na-Var products cost a little more per gallon. But being longer-lasting, one man can do the job that may take two, three or as many as four men with ordinary floor waxes. You save vital labor...and in the long run actually cut material costs as well. Ask us to prove it with a free demonstration.

FREE BOOK

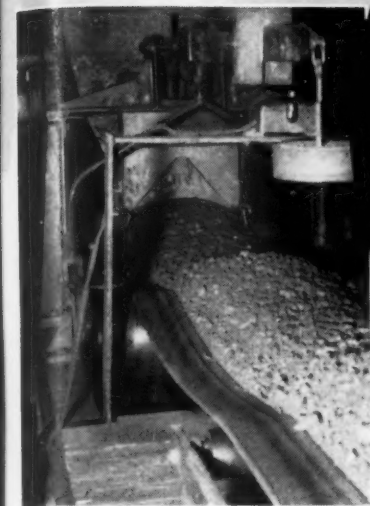
A handy reference book for the maintenance man, giving the step-by-step treatment for every type of floor. Write for a copy today...no obligation.



CONTINENTAL CAR-NA-VAR CORP.
1422 E. NATIONAL AVE. BRAZIL, IND.

Specialists in Heavy Duty Floor Treatments

IT
"TOOK OFF"
FROM A LOT OF PLACES
AT ONCE



ANOTHER American fighting plane has been put in the sky—and American industrial workers, practically anywhere, may see it and take pride in the fact that they helped put it there. For a plane's first flight really starts from a lot of places—the coal miner has supplied the fuel for other industries which produce aircraft materials and parts, other miners and quarrymen have made different ores and materials available . . . the personnel of metal producing plants have doubled and redoubled their efforts to provide enough aluminum, steel, copper, etc. for the vast number of planes we need . . . men and women in widely divergent manufacturing plants the country over have turned to the job of making airplane sections or parts. All these and many more, in addition to those who are specifically classified as aircraft workers, have had a share in hatching this bird of war.

Better than any others, these people who are on the actual production lines know the far-reaching importance

of mechanical rubber products to all the industrial processes which a finished airplane represents. Either in their own hands or all around them, no matter what their field, they see industrial rubber hose and belting serving vital operating functions. Making sure that war industry has enough of the right kind of rubber equipment is Republic's assignment today. **REPUBLIC RUBBER DIVISION OF LEE RUBBER & TIRE CORP., YOUNGSTOWN, OHIO.**

• Help to conserve the nation's rubber. See that your plant has a copy of Republic's "Handbook of Care in the Installation and Use of Mechanical Rubber Equipment." Write.



As mechanical rubber products come into the production picture, all down the line, so does the Industrial Distributor . . . with his experience and facilities for speed and efficiency on industry's equipment needs. The Republic Distributor Emblem is your assurance of completely qualified service on mechanical rubber as well as other goods.

THROW YOUR SCRAP

WE ARE
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INTO THE FIGHT

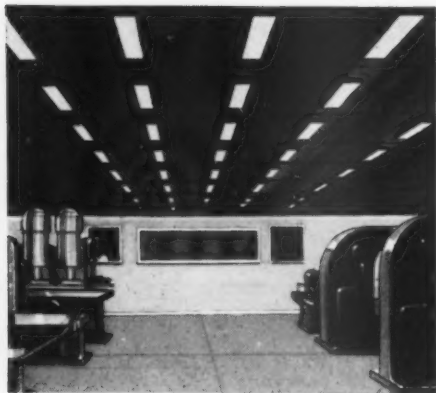
REPUBLIC RUBBER

HOSE • BELTING • MOLDED GOODS



PACKING • EXTRUDED PRODUCTS

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Lamp Insurance?

Yes, Sir, you can insure longer lamp life with G-E Starters because they give —

CONTROLLED STARTING

Controlled starting means the starter lights the lamp at the precisely right moment—not before, not after. This cuts to a minimum the amount of emission material used. And it is the excessive use of this material that shortens lamp life.

"MASTER NO BLINK" STARTER

Here's the starter that's recognized as 1942's outstanding contribution to better fluorescent lighting.

It is a manual reset starter that completely eliminates blinking and flickering, and saves you power, maintenance time and war vital materials.

This new G-E Starter instantly cuts out a dead lamp from the circuit. No current is used to keep the lamp locked out. No current is wasted trying to restart the dead lamp. No wasteful wear and tear is placed on the starter and ballast—all of which means a saving in current and vital materials.



GENERAL ELECTRIC

THE WHOLE STORY'S IN THIS FOLDER

The full line of G-E Accessories and their proper use for best fluorescent lighting may be had by writing to General Electric Co., Section G232-77, Appliance and Merchandise Dept., Bridgeport, Conn.

(Continued from page 190)

only one-half pound of tin for every 100 pounds of strip, one third the amount needed on hot-dip lines. The process is faster, can be handled in form of large coils and the coating is applied uniformly.

USES OF OIL FROM COAL STUDIED BY BUREAU OF MINES

Continuing a long-range study of the hydrogenation of coal to produce gasoline, lubricating oil and other related products, the Bureau of Mines chemists now are engaged in analyzing the crude oils made from coal to determine their possible uses in various fields of industry. The Bureau has been producing gasoline and oil from coal on a semi-commercial scale at its Pittsburgh pilot plant for some time. The operation of internal combustion engines with motor fuel produced at the plant is an established fact, according to D. R. Sayers, director of the Bureau of Mines, and attention is now being directed toward the significance of the process as a source of compounds and solvents used in the lacquer and plastic industries in making special fuels, aromatics, raw materials for synthetic rubber, and in other fields.

ROSIN IN SOAP

The use of rosin in soap, especially in spray-dried or powdered soaps, is discussed in a technical booklet issued by the Hercules Powder Co., Wilmington, Del. (Continued on page 194)

"SOLUTION"



To Your
SODERING PROBLEMS

Formula
705

Just one of the many "SOLUTIONS" developed by Allen chemists to meet the complex problems of manufacturers with soldering and tinning problems.

Formula 705 is specifically recommended for electrical, magnetic and "precision" work... where even minute corrosion is undesirable. Completely non-acid, non-electrolytic.

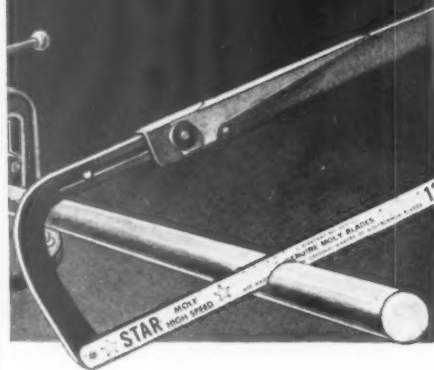
Remember, there's an ALLEN FLUX FOR EVERY PROBLEM. Let us in on your soldering and tinning problems... we've helped hundreds of other firms.



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Ten years' test makes Star best



● STAR "Moly"* High Speed—the first molybdenum alloy hack saw blade—the only genuine "Moly"—is the result of ten years' testing by thousands of plants on heavy-duty metal sawing—the result of ten years' improvement in steel, heat treatment and uniformity.

Because of this head start, today's STAR "Moly"* High Speed is unexcelled for swift sawing and long life. For high speed sawing—hand or power—demand STAR "Moly"* High Speed. Look for its all-over copper metallic finish.

INEXPERIENCED WORKERS CAN'T BREAK

STAR Unbreakable Special Flexible in use in a frame. Yet this blade cuts and lasts like an all hard, speeding sawing and reducing blade-changing time. All-over green metallic finish.



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Incorporated

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DO YOU KNOW THE **Value** OF YOUR MOTORS?



Have you tried to replace a motor lately? Then you know they're hard to get... in many cases, impossible. This situation makes the motors you have, truly worth their weight in gold!

In the face of this difficulty, what patriotic steps are you taking to make your motors last longer? What are you doing to avoid trouble, to insure highest operating efficiency? What are you doing to conserve critical motors?

No matter what *else* you're doing... Fafnir Ball Bearing Motor Cartridges can help you do *more*! If you're losing time making bearing replacements, Fafnirs will solve your problem. Under all working conditions, flying sand, dirt, dust or moisture, friction-free Fafnirs will stay on the job longer. And with ordinary good care... indefinitely.

Fafnir Motor Cartridges are on the job in many war-busy plants... cutting power costs, reducing motor maintenance and replacement time and costs, and helping to boost needed production. They can be easily substituted for less efficient bearings now in use. A call to a nearby Fafnir distributor may be your best insurance for uninterrupted motor service. The Fafnir Bearing Company, New Britain, Connecticut.



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THE BALANCED LINE—FOR
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Mass Production of Hose Clamps Speeded With

WITTEK
Automatic
ROLL FEEDS
FOR PUNCH PRESSES



Wittek Automatic Roll Feeds and Reel Stands are designed to fit all makes and sizes of punch presses and made in various types for every requirement in the automatic feeding of coiled strip stock.

In the all-out war production of Wittek Hose Clamps for aircraft, tanks, jeeps, trucks, and engines, the making of stampings from coiled strip stock is a major operation.

To attain this mass production schedule, speed, accuracy and efficiency in feeding the metal to punch presses were essential. Wittek pioneered and developed the Wittek Automatic Roll Feed for that purpose. It has been proven on Wittek's and many other production lines, as the most important contributing factor for maintaining those present high production levels. Wittek Automatic Roll Feeds and Reel Stands are made available to other manufacturers who fabricate parts from coiled stock and demand speed and efficiency in their punch press operation. Write for catalog, prices and specifications.



Wittek Hose Clamps, for over twenty years identified with the Automotive and Aviation industries, are noted for their permanent leakproof hose connections. For original equipment and replacement.

WITTEK MANUFACTURING CO.
4305-15 W. 24th Pl., Chicago

(Continued from page 192)

Detailing results of extended research, the report points out that the proper use of rosin can impart to bar, spray-dried, or built soaps, quick and lasting suds, improved solubility, and reduced dusting of spray-dried soaps and flaked soaps. The data also indicates that detergency can be improved by the proper use of rosin.

1 1 1

PURCHASING COURSE AT BOSTON UNIVERSITY

Meeting the needs of the times, Boston University has added to its curriculum an intensive 10-weeks course on "Inventory, Storeskeeping and Purchasing Records," designed to provide training for men and women in essential purchasing and stores department records and office routine. Instructor of the course is Dana D. Phillips, Chief Clerk of the Purchasing and Stores Department of the Boston & Maine Railroad.

1 1 1

VISUAL LEARNING GUIDES FOR SHOP INSTRUCTION

A series of visual learning guides for use with U. S. Office of Education Training Films, has been evolved by the National Audio-Visual Council, Chicago, for more effective detail education of shop workers. The Learning Guides were developed on the theory that quick visual impressions are not easily retained, even

Keep War Production MOVING FAST

When products must be transferred from one process to another, or moved *anywhere*, you can save time, money and labor by moving them with

Fairbanks

Hand or Platform Trucks.

They're smoother running, easier to handle, less fatiguing and last years longer.

Made in styles and sizes for every service. Backed by over 50 years' experience.

Write for catalog No. 51-52.
THE FAIRBANKS COMPANY
22 East 4th St., New York, N. Y.
Boston, Mass., Pittsburgh, Pa.
Distributors in Principal Cities.



PORTRAIT OF A Valuable* PAIR OF HANDS



* "Miking" to .001 inch requires flexible, healthy hands . . . the kind of hands that use PAX Granulated Industrial Skin Cleanser. PAX won't "dry out" hands because . . .

1. pH below 10
2. No Free Alkali
3. Low Alkaline Salts

PAX
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ARMSTRONG-BRAY STEELGRIP

FLEXIBLE BELT LACING



Prompt Delivery!

—on both standard types of belt lacing.

STEELGRIP that is applied with a hammer that penetrates belting easily and clinches securely to make a strong, flexible, smooth joint. 2-piece hinged rocker pins take up wear. In boxes or long lengths for wide belts, it compresses belt ends and prevents fraying. 8 sizes.



BELT HOOKS

Applied with any standard make lacing machine, these belt hooks come on double (patented) aligning cards that hold hooks in perfect alignment and prevent card end waste. 6 sizes.

ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
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They reach for a drink and save time



If your machines require uninterrupted attendance, the Ajax Mobile Water Service will be valuable to you. The strong galvanized tank can be carried by a "water boy" or placed upon your traveling cafeteria. Clean Ajax Paper Cups are drawn from a dust-tight dispenser fastened to the tank. Each cup is used only *once*—thus avoiding the danger of contagion.

Address Dept. 2-P at plant nearest you.

LOGAN DRINKING CUP CO., 68 Prescott Street, Worcester, Mass. • PACIFIC COAST ENVELOPE CO., 416 Second Street, San Francisco, California U. S. ENVELOPE CO., Los Angeles Division, 2828 East Twelfth Street, Los Angeles, California.

Divisions of United States Envelope Company



Ajax "Mobile Drink-Well" Water Service is used widely on War construction jobs. Saves time, promotes health, improves morale. Perhaps you can use it—send for information.

AJAX CUPS

Any drinking fountain can easily be equipped so that AJAX cups can be used

though the Government films are masterpieces of interest, clarity and technique. The guides are in the form of objective lesson sheets, accompanied by suggestions for discussion topics based on film showings, suggested activities, and a brief bibliography. The four-page guides now are available on five different tools used in Precision Measurements, five operations of the Engine Lathe, and five operations of the Milling Machine. Guides now in preparation are on Sensitive, Radial and Vertical Drills, Shaper, Centering and Layout, Bench Work, Single Point Cutting Tools, and Vertical Boring Mill, each of these subjects to have from one to seven guides—the guides for bench work, for instance, being seven. Each guide is sold in packages of 50 at \$1.45 per package.



LUMBER MILL STOCKS LOW

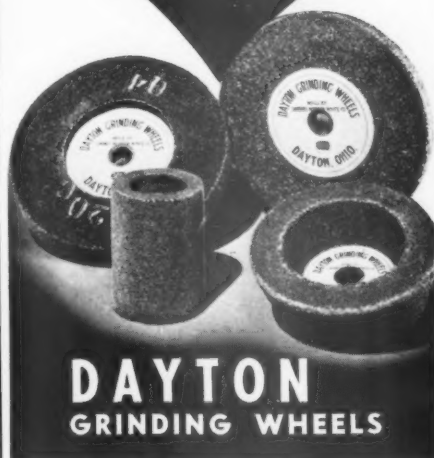
Estimates of hardwood lumber consumption for 1943 totaling 5,670,000,000 ft. have been announced by the Lumber and Lumber Products Division of WPB as follows: Boxing and crating, 2,880,000,000 feet; factory uses, 1,560,000,000 feet; civilian construction (including war housing) 800,000,000 feet; direct military purchases (including Army, Navy, Maritime Commission and United Kingdom) 430,000,000 feet. These estimates indicate a decrease from 1942 in all uses except boxing and crating, which is higher by 730,000,000 feet.

Members of the Hardwood Lumber Manufacturers Advisory Committee have

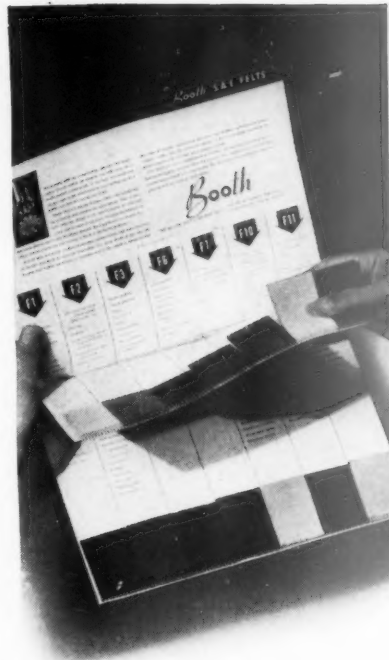
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manufactured to
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Made in all types,
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DAYTON GRINDING WHEELS



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• Designers, production and purchasing men make good use of Booth's combination felt application chart and sample file. Contains actual swatches of all S.A.E. felt types . . . felts which (when precision die-cut into Booth mechanical felt parts) serve exacting aircraft and other key industries.

Complete specification tables are included . . . and the kit is bound standard file size. Write for it...no obligation...no sales follow-up.

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Since 1880



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The line is complete, GRIFFIN Special Alloy (Molybdenum), High Speed Steel, Soft Back (Flexible), Non-Strip, and Soft Center (Flexible) and GRIFFIN Band Saws.

JOHN H. GRAHAM & CO. INC.
General Sales Agent
105 DUANE STREET — NEW YORK CITY



advised the Lumber Division that hard-wood production is at least 10% below that of last year and may be down 20% to 30% in some regions, due to reduced log inventories. Mill stocks are below normal. Scarce items are No. 2 and 3 common oak, thick birch and maple, and tupelo.

CHECKS METAL COATINGS THICKNESS

Eliminating former complex processes of cutting, or scratching and making microscopic examination to determine thickness, portable electric gages, now supplant the old process with more dependable accuracy without marring parts, saving time, manpower and vital materials. For corrosion prevention and to increase wearing qualities, steel bearings, for instance, which go into plane and tank engines are lined with lead-bronze, copper, silver or heavy babbitt while other steel parts often are plated with chrome, nickel or cadmium. The thickness of lining or plating must be accurate to a thousandth of an inch, and can be measured by the electric gage. Portable gage developed by General Electric Company for such determinations weighs but seven pounds, and operation is by plugging into an ordinary alternating current outlet. Another type of gage has been developed for measuring the thickness of nonmagnetic metal sheets and plates such as aluminum, copper, brass and bronze. It is used to check the wall thickness of magnesium and aluminum alloy castings rolling off assembly lines no steel backing being necessary.

DARNELL CASTERS



**FREE
Manual
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ASKING!**

**KEEP TURNING
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Our catalog is no colorful picture book—but it is easy to use and easy to find things in. It was devised for the superintendent, the master mechanic and the purchasing agent.

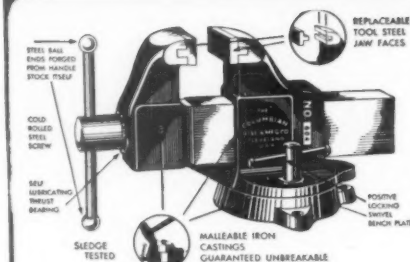
It is a catalog of standard and special screws—wood or metal—stripped right down to facts and specifications. If you haven't a copy, please send for it now.

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All types of heads and threads

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THE WORLD'S LARGEST MAKERS OF VISES



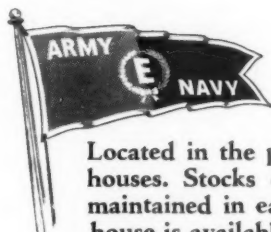
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by Telephone-Teletype-Telegraph

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Located in the principal war production centers are the Jessop Steel warehouses. Stocks of tool and die steels, stainless and composite steels are maintained in each for your convenience. The service of any Jessop warehouse is available to you. If your order cannot be filled from the warehouse stock in your locality it is relayed to our general offices where quick action is taken to locate the desired material in any of our other warehouses and immediate shipment arranged.

For fine tool steel service call the Jessop representative. He is a trained steel specialist and is ready to serve you on a moment's notice.

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Carbon • High Speed • Composite Tool Steel • Special Alloy • Stainless • Stainless-Clad (Silver-Ply)

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① PICKS UP OIL

and grease faster and in greater volume.

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actively and removes stubborn grease-caked dirt.

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—you can't light it with a blow torch.

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A request on your letterhead will bring you (post-paid) a liberal size FREE testing sample of Fibre-Tex. Write today!



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RECEIVE "M" AWARDS FOR OUTSTANDING PRODUCTION

The Davis Engineering Company, Elizabeth, N. J., has the honor of being the first in its field to receive the U. S. Maritime Commission's "M" award of merit, the pennant and labor merit badges for the employees being presented at ceremonies by J. E. Schmeltzer, Technical Assistant to Commissioner Howard L. Vickery at ceremonies at the plant.

The Cooper-Bessemer Corporation of Mt. Vernon, Ohio and Grove City, Pa., and its employees were awarded the "M" pennant and labor merit badges by Rear Admiral Howard L. Vickery, for their "outstanding record" in supplying heavy castings for the merchant ships of the Victory Fleet.

The Superior Engine Division of the National Supply Co., Springfield, Ohio, and its 2000 employees were presented with the "M" pennant and labor merit pins for excellent workmanship and maintenance of difficult production schedules supplying engines for the Victory Fleet.

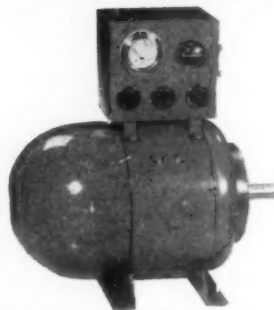
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Commercialization of carrier current as a means of communication and control in the power industry has led to the standardization of apparatus for quantity production, by the General Electric Company. A carrier-current system consists of three elements: One or more transmitters, the

(Continued on page 200)

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PROMPT DELIVERIES.
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17 years specialized experience in manufacturing electrical generators of all types. Send us your specifications and let us quote you.

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No Dermatitis To Stop Busy Hands
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• Many workers' hands are made sore by an allergen in rubber gloves. Stanzoil Gloves of DuPont's miracle neoprene are free of this harmful factor—hands are safe *inside* and extra safe from outside because neoprene resists attack by oils, acids, caustics, often outlasts rubber 3 to 7 times. You save money, avoid lost production and costly liability claims with Stanzoils. Complete line to meet all needs. Used in hundreds of industries. Write now for current delivery data.

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Remind your employees of the importance of eyesight protection to the war effort. Copies of the Bausch & Lomb poster shown above are available upon request. Bausch & Lomb Optical Company, 741 St. Paul Street, Rochester, N. Y.

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The facilities of our modern File Research Laboratory, skilled metallurgists and mechanical engineers are now offered free to industry.

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Whether it's a metal, alloy, composition material or a laminated product — we can tell you how to file it better.

Jobs tackled for other firms in scores of lines during the past decade give us a background of invaluable experience. Let us help you.

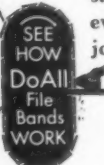
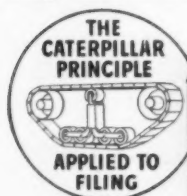


One view of our Laboratory with the latest type Photomicroscope which shows in minute detail the grain structure of your material.

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(Continued from page 193)

power lines over which the carrier is transmitted, and the associated receivers. Much of the apparatus resembles radio equipment. The carrier-current energy is generated as in broadcast transmitters and received as in home radios, but is transmitted over power lines. The frequencies are much lower than those to which broadcast receivers are adjusted. A single power line can carry several different carrier frequencies simultaneously, each performing a different service. Four of the most important jobs performed by carrier current on high-voltage power lines are telephoning, relaying, telemetering (including automatic load control) and supervisory control. In many cases existing telephone facilities may be connected with carrier-current channels.

1 1 1

A CAUSE FOR AMAZEMENT

"Last year's job was not merely a big job; it was so tremendous that we look back at it in amazement", declared Donald M. Nelson at a Philadelphia meeting celebrating the first anniversary of the creation of the War Production Board.

(Continued on page 202)

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TRADE-MARK REG. U. S. PAT. OFF.

Discover real towel economy this easy way. Send for free testing samples of Straubel Texturized Towels. Compare them with any other towel for fast, thorough drying. See how one towel completely dries your hands and leaves no lint on the skin. Write for your samples now!

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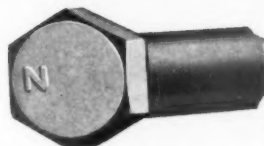
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Very Tough Cap Screws

FOR YOUR MOST EXACTING NEEDS
Cleveland Heat-Treated Alloy Steel Cap Screws

• For those critical fastening jobs where you want the extra toughness obtainable in alloy steel, Cleveland has the capacity to make, and the equipment to properly heat treat the screws you need. Headed and threaded by the Kaufman Process, of course. Special quotations on request for quantity runs in standard cap screw and special dimensions. Write us for prices and deliveries.

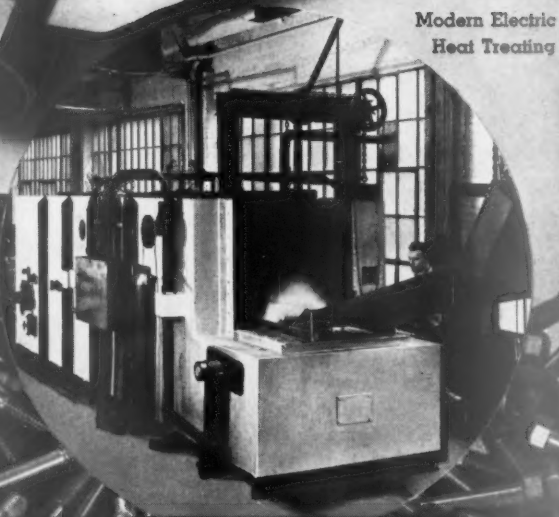
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2917 EAST 79th STREET, CLEVELAND, OHIO



"N" ordinarily for "Nickle Alloy"—
now for "National Emergency" steel.



Modern Electric
Heat Treating



Cleveland Cap Screws

Set Screws and Special Upset Parts


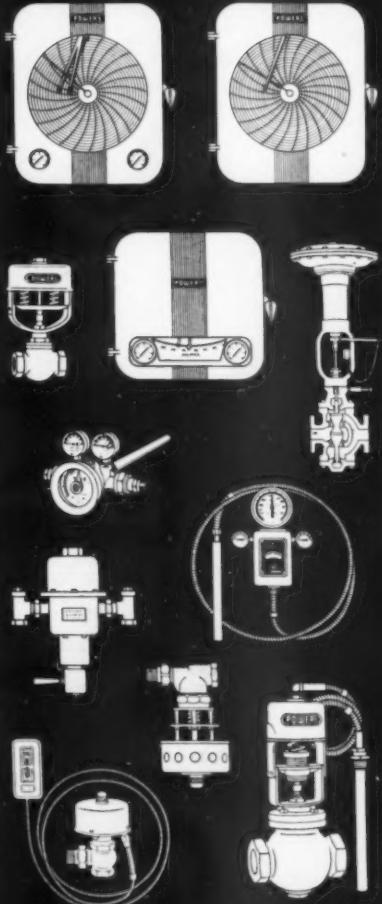
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Offices in 47 Cities—See your phone directory.

THE POWERS REGULATOR CO.

(Continued from page 200)

"We are discovering that our America is just about twice as strong, twice as capable and twice as productive as we had ever before imagined. There is no physical achievement that is impossible to us. We can do, as a people, anything—literally anything—that we want to do".

ADAPT WOOD PULP FOR SMOKE-LESS POWDER MANUFACTURE

Through extended research, the Hercules Powder Company has adapted wood pulp for the manufacture of smokeless powder, a process that is reported to have increased powder output about one quarter wherever it has been used. It is estimated that the wood pulp development, based upon the difference in the cost of cotton and wood pulp, will lower the cost of manufacture of smokeless powder at United States ordnance plants about \$20,000,000 this year.

PERFECT WOOD SASH UNIT FOR INDUSTRIAL CONSTRUCTION

A wood sash unit especially adapted for industrial construction has been developed by the National Door Manufacturers Association in conjunction with the architectural firm of Graham, Anderson, Probst and White. The wood unit is being used to replace metal products in a large list of industrial and war department building projects. Complete information in regard to the sash may be had from the association, whose address is 332 So. Michigan Ave., Chicago.



A New High-Speed ROTARY PRODUCTIMETER for the Production Front

From its streamlined appearance to its rugged construction features, the new "HDW" (shown above) meets the ever-increasing demand for high-speed rotary counters, moderately priced. It is designed and built for heavy duty at speeds up to 2000 counts per minute...and is especially adapted for quick starting and stopping applications. Double worm drive, oil-less bearings, light wt., strong plastic wheels, hardened steel parts... assure smooth action and dependable service.

Send for Bulletin No. 100 on Standard Productimeters.

Many types and models available for use in various industries.

DURANT MFG. CO.

1959 N. Buffum St.
Milwaukee, Wis.

159 Eddy St.
Providence, R. I.



DIAMONDS for Victory

Cooler dressing
Closer tolerances
Micrometer Accuracy
Because: Wing key heat dissipation and absolute Diamond lock nib.

• Three grades of diamonds. Common quality \$12 per karat. Medium quality \$24 per karat. Select quality \$48 per karat. (Contour template diamonds supplied only in Medium and Select quality.)

All diamond sizes 1/4 to 10 karat are nib mounted for immediate shipment... Billed subject to approval. Specify quality of diamond wanted. We recommend a minimum size of one karat for each 6" diameter of grinding wheel. (24 hour resetting service, \$1.00 post paid.)

Grinders instruction card free.

Send specifications and prints for prices on turning and boring form tools.

DIAMOND TOOL COMPANY, Not Inc.
Sheldon M. Booth, Pres.
938 E. 41st Street CHICAGO, ILL.

I'm Looking for Tough Cleaning Jobs



The PERMAG people have undertaken jobs that seemed impossible to solve; but expert study and the specially developed

PERMAG Cleaning Compounds

have completely solved the hardest cleaning problems that were submitted over a 20 year period.

We now have over 300 formulas that have been used in the industrial field. There is a PERMAG Compound made for every cleaning job. Write for details.

MAGNUSON PRODUCTS CORPORATION

Main Office 50 Court St., Brooklyn, N. Y.
Mfrs. Specialized Scientific Cleaning Compounds for the auto and truck industry. Warehouses in principal cities. In Canada: Canadian Permagon Products Ltd., Montreal, Toronto.

When writing, advertisers please mention Purchasing

SAFETY STEEL TAMPS

Will Not Spall!
Will Not Mushroom!

Heavy Bevel LETTERS & FIGURES



These stamps will give an outstanding performance on any type of stamping job. Recommended for stamping armor plate, airplane parts, guns, tank parts and any other steel ordnance product. Will give at least 50% to 100% more service than ordinary stamps because of special alloy steel used. Heads of stamps do not have to be redressed. Available in all sizes $\frac{3}{32}$ " to 1".

Write for prices and literature.

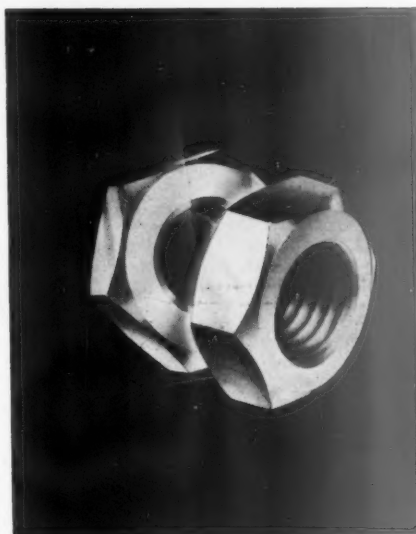
M. E. CUNNINGHAM CO.
MARKING DEVICES
154 E. Carson St. Pittsburgh, Pa.

400,000 PRODUCTION IDEAS SUBMITTED BY WAR-WORKERS

American ingenuity has already produced more than 400,000 practical production suggestions that in the aggregate are a vital win-the-war force, according to A. G. Nordhold, chief of the field operations branch, War Production Drive Headquarters, Washington. Awards of Individual Production Merit have been conferred for 26,000 suggestions that have helped save time and manpower and improve arms production. Many of the suggestions have proved of outstanding military importance. One of the suggestions resulted in a device that has already saved the Signal Corps the equivalent of nearly 37 years of work. Another suggestion led to the development of testing equipment that permits the instruments of combat planes to be checked in three minutes, sending them out to battle hours faster than was possible before. Mr. Nordhold told of these developments at a recent meeting of the National Association of Suggestion Systems, Inc., 220 South State St., Chicago, Ill.

NEW USE FOR TRACTORS

A practical solution to the problem of labor shortage and the job of cleaning out open-hearth furnace slag pockets, has been found by the Timken Roller Bearing Company, Canton, Ohio. The solution lies in a Caterpillar tractor mounted on a Traxcavator. Formerly this was a hand and air-tool job requiring the services of 30 men from 3 to 6 days. With the tractor, it takes but two days.



IT PAYS TO USE THESE "Double Chamfered" Nuts by Central!

★ No "try — turnover — and try again" when assembling war products with Double Chamfered Nuts by Central.

Both Sides Are "Tops" . . .

Both sides being identical — there's no fumbling. Assembly line workers pick them up *right side up* every time for BIG SAVINGS on assembly costs.

Chamfering the Central way — in addition to embossing the metal to proper shape and thickness — increases its density and hardness, while the finished products are free from surface irregularities. Such nuts can be (and are) more accurately tapped with clean, sharp threads that provide maximum thread engagement. They start easy — spin on — STAY TIGHT.

Regular quantities of Double Chamfered Machine Screw Nuts carried in stock in steel and brass. Also available in other suitable metals.

Used to assemble Aviation Components — Marine Controls — Communications Devices and Components — Ordnance Products. Stocks Include Many A N Items.

Write for new circular "P" today.

CENTRAL SCREW COMPANY

3515 Shields Ave., Chicago, Ill.



We've opened the second front... We've taken the first steps toward Tokio... But our BIGGEST job is ahead! We're already buying War Saving Bonds. Let's keep on buying... But there's much more to be done. Uncle Sam needs our \$\$\$ strong!

ALL TOGETHER NOW!

Let everyone invest every available dollar in the front line. There's no finer investment. These dollars are our most vital SECURITIES! Go to your bank, broker, investment dealer, or wherever you make investments, and...

Invest in UNITED STATES TREASURY TAX SAVINGS NOTES and UNITED STATES SAVINGS BONDS

ESTABLISHED 1873

S. G. TAYLOR CHAIN CO.

P. O. Box 509P HAMMOND, INDIANA



PLASTIC PATCH

Takes Traffic Immediately . . .

No traffic interruptions when you patch broken concrete with durable INSTANT-USE. Material comes ready mixed. Simply shovel into hole, tamp and run traffic over immediately — without waiting. Bonds tight to old concrete. Makes smooth, solid, lasting patch. Withstands extreme loads. Keep a drum on hand for emergencies. Immediate shipment.

REQUEST DESCRIPTIVE FOLDER

... and Details of
FREE TRIAL
OFFER



INSTANT-USE

FLEXROCK CO. 2319 Manning St., Phila., Pa.

When writing advertisers please mention Purchasing

CONSERVE YOUR TOOLS



10½ x 15" reproductions of the above illustration for posting in your shop, will be sent to you upon request.

This advertisement is a part of The Fairmount Tool Victory Drive, tool conservation campaign.



Hand Tools • Special Tools • Forgings

**The FAIRMOUNT
TOOL & FORGING CO.**

★ ★ ★ 10611 QUINCY AVE. CLEVELAND, OHIO

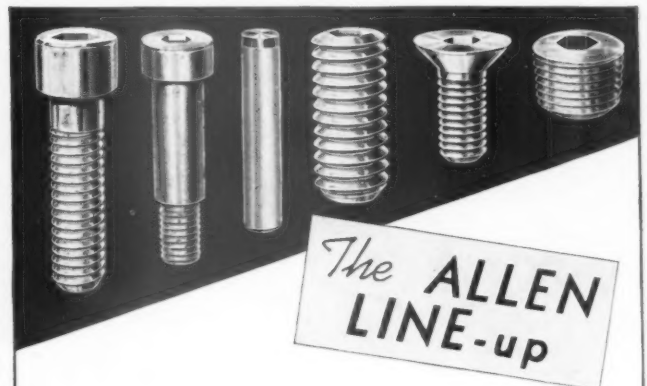
RAW MATERIAL QUALITY CONTROL

(Continued from page 93)

policy that each plant shall govern the stocking of its own group of raw materials independently of all others, whereas another company might have established the set-up of having all identical items of raw materials covered by identically worded ordering descriptions and identical identifying stock numbers at all plants. In the latter case, an engineer in control of the description writing at any one of the plants would find it obligatory to follow whatever plan of coordination had been established by the company to implement its policy in this respect.

In any cooperative venture, such as a manufacturing enterprise, it is a healthy condition when the individuals in each department feel that their special part of the work is of outstanding importance. Those members of the purchasing and engineering organizations of a manufacturing concern who are charged with the cooperative responsibility of originating, editing or approving new and changed raw material ordering descriptions may justifiably feel that their efforts are of outstanding importance to the accomplishments of the company as a whole when they have done their job well.

For (a) if the raw materials were not up to standard in quality, no matter how excellent the manufacturing processing activities of the company might be, the finished produce would either be deficient in quality or unnecessarily costly, and (b) with thousands of items of raw materials on the active stocking list, as is the case in many large companies, the confusion would be disastrous if the quality control (as well as the production control) over them were not adequate.



to HOLD machine set-ups

ALLEN Products stand up to the stresses in war-driven machines and die assemblies. They hold parts together "under fire", — preserve the strength and unity of each assembly. . . The well-informed Purchasing Official needs a handy, charted reference to Allen SPECIFICATIONS. 10-page Bulletin awaits your request: — includes standard dimensions of Allen Hollow Set Screws, Square Head Set Screws, Socket Head Cap Screws, Flat Head Cap Screws, Socket Head ("Tru-Ground") Shoulder Screws, "Tru-Ground" Dowel Pins, Hexagonal Keys, Hollow Pipe Plugs. Send today for this Data-Bulletin up-to-date!

ALLEN Products sold only through local Allen Distributors.

THE ALLEN MFG. COMPANY
HARTFORD, CONNECTICUT, U. S. A.

When writing advertisers please mention Purchasing



A BETTERMENT . . .

Not a Substitute

The modern dictating machine is not a substitute for the handwritten "copying ink" letter of the last century.

It is a BETTERMENT.

What executive could afford to go back to handwriting his own letters? His competitors would soon outstrip him if he even dared try it.

Neither will forward-looking designers and engineers want to go back to habitually used, now hard-to-get, weighty, corrosive, costly materials. These men are dis-

covering that CONTINENTAL-DIAMOND NON-metallics offer unique property combinations that make possible betterment of product, process and performance.

They have made such discoveries by bringing their "What Material?" problems to the C-D Research Laboratory. With FIVE C-D NON-metallic materials to use . . . with over 27 years of "know how" to draw upon . . . and free from any prejudice favoring one or two types of NON-metallics, the C-D Laboratory is usually able to work out an answer to most problems that definitely results in a BETTERMENT.

You can get acquainted with C-D NON-metallics through our Booklet GF-17. When you want Laboratory Research assistance . . . it's yours for the asking.

Continental = Diamond FIBRE COMPANY

Established 1895 . . . Manufacturers of Laminated Plastics since 1911 — NEWARK • DELAWARE

When writing Continental-Diamond Fibre Company please mention Purchasing

SECONDS that COUNT



TANGLEFOOT GUMMED KRAFT SEALING TAPE is scientifically designed for quicker, smoother, no-fuss application. And, consequently, will save valuable seconds or even minutes on every one of the thousands of package-sealing operations in your packing and shipping departments. Ask your paper merchant to supply you with a trial order and watch those seconds saved mount into hundreds of precious man-hours for the battle of production. And because it saves time, TANGLEFOOT GUMMED KRAFT SEALING TAPE is the most economical tape you can use.

Highly important, too, is the fact that the TANGLEFOOT adhesion never crystallizes, becomes brittle or loosens in handling or storage.

You can depend on the efficiency of TANGLEFOOT TAPE—once stuck, it's stuck for good.

THE TANGLEFOOT COMPANY
Grand Rapids, Michigan



TANGLEFOOT GUMMED TAPE



When writing advertisers please mention Purchasing

PAPER PARADE

(Continued from page 64)

this Detailed Bill (broken down into major assemblies) reaches the Claimant Agency, they in turn will check weights of identical units in one contract against those in another.

Such detail is impossible with two thousand contracts. With eleven models it is not only possible, it is essential. We are submitting that billion dollars that the manufacturers charge to constant contract renegotiation! Shall we then accept their material prices without question?

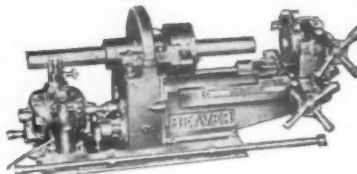
It is the pyramiding of errors which makes necessary the checking and double-checking of Bills that are to be used in CMP. For these Bills are based in most instances on a single unit. An error of half a pound becomes a critical shortage when multiplied by a million.

Under horizontal allocation—PRP for example—this is not the case. A manufacturer bases his calculations on his entire plant's production for a quarter of a year. If he used a quarter of a million pounds of one shape of material the first quarter and a half a million pounds the second quarter, he may, in the middle of the third quarter estimate his requirements at a full million pounds for the last quarter of the year. Perhaps he has added one hundred thousand pounds as a margin of safety. Perhaps he has exaggerated his requirements another hundred thousand pounds in error. He is still 80% correct. And there is every likelihood that his requirements will be cut by 20% or more.

But under CMP it is different. The Prime Consumer

(Continued on page 208)

The A-B-C of Pipe and Bolt Machines

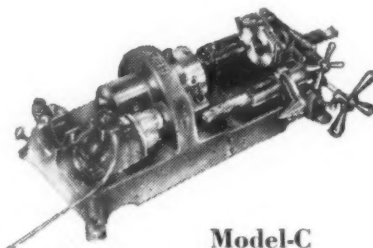


Model-A

A high-speed heavy-duty deluxe Pipe and Bolt Machine. Range $\frac{1}{8}$ to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts, $\frac{1}{4}$ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

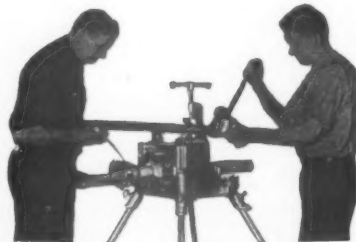
Model-B

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range $\frac{1}{8}$ to 2-inch—up to 8-inch with drive shaft and geared tools. Bolts up to $1\frac{1}{2}$ -inch. Weight 280 lbs. Ask for Bulletin-B.



Model-C

A sturdy little Power Unit Converts Hand Pipe Tools into Power Tools from $\frac{1}{8}$ to 8-inches. Threads 8-inch in 6 minutes. Threads bolts up to $1\frac{1}{2}$ -inch. Equipped with automatic chuck wrench ejector—a safety feature. Two men can use it at the same time without interference. Easily portable—weighs about 150 lbs. Write for Bulletin-C.



BEAVER PIPE TOOLS

243 GROW AVE., WARREN, O.

**IT'S NEW!
IT'S POTENT!
IT'S READY!**



A SPECIAL EGYPTIAN CLEAR LACQUER to Apply Over Black Oxide Coatings

Experience-taught formulators in EGYPTIAN laboratories have developed this special lacquer to provide needed protection against salt spray and staining in handling Black Oxide Coated articles.

Many war contracts require such protection.

Oil, sometimes used for this purpose, is at best a temporary expedient. It has no advantages beyond immediate protection. Articles so coated are unpleasant and hard to handle.

EGYPTIAN Special Clear Lacquer used over Black Oxide Coated articles, is meeting with

unqualified success on all fronts. It provides full protection against staining and spotting from handling, and also against that destructive ally of corrosion—salt spray.

Let us send you a sample of this new EGYPTIAN finish, and information about other EGYPTIAN items that are triumphing over the harsh uses and frequent abuses of war service.

Have you a copy of our loose-leaf booklet, "U. S. Government Specification Finishes," indispensable to war plants with metal finishing problems? Just ask for "Spec" Book Pur.

These are a few of the more important Government "Spec." finishes which we can furnish. For more complete list send for "Spec." book.

H.O.M.S. ES-680
SYNTHETIC TYPE
PROTECTIVE COATING
JQD-144-A
LUSTRELESS
BLACK BAKING
ENAMEL
AXS-736 (Rev. 1)
CLEAR FINISH
FOR STEEL CARTRIDGE CASES
AXS-680
LUSTRELESS LACQUER ENAMEL
FOR AMMUNITION
AXS-684
TYPE I and II
LUSTRELESS PAINT FOR AMMUNITION
3-162-A
NITROCELLULOSE LACQUER ENAMEL
FOR AMMUNITION
P-27-b-2
ZINC CHROMATE PRIMER
84
ZINC CHROMATE PRIMER
AN-TT-P-656
ZINC CHROMATE PRIMER
PKS-979
LACQUER ENAMEL FOR AMMUNITION
(CELLULOSE TYPE)



THE EGYPTIAN LACQUER MANUFACTURING CO.
ROCKEFELLER CENTER, NEW YORK, N. Y.

EGYPTIAN

Superior FINISHES

When writing The Egyptian Lacquer Manufacturing Co. please mention Purchasing



Photo by U. S. Army Signal Corps

PORTER BOLT CLIPPERS

The tools that go to the job, on the bench, on the floor, or out on the work—the tools that need no power except a good pair of hands—the tools that multiply manpower to cut bolts, rods, flat stock, wire and stranded cable—quick and clean. The tools that save time, save men and solve emergency problems. The tools that are now demonstrating to our Armed Forces their amazing power, durability and reliability by cutting through the barbed wire entanglements in the far-flung battlefields of the world.

Capacities to $\frac{3}{4}$ " annealed bolts. Special tools to cut hard steel. Special models engineered to meet special requirements—pressing, rivet squeezing, crimping, etc.

Write for catalog illustrating all models with valuable information.



WE ARE PROUD that our Armed Forces have honored our Men and Women with the Army-Navy "E" Award for Excellence in War Production. (Note: We are using every available machine and every available man, twenty-four hours a day, to meet Government requirements, and especially to meet our jobbers' needs with the earliest possible shipments permissible.)

H. K. PORTER, Inc.
EVERETT, MASS.

(Continued from page 206)

estimates the gross weight of material for a part. Under the Summary Bill this estimate is probably based on a part he doesn't even make himself. He adds 10% for safety. He adds another 10% for spoilage. He adds another 10% for assembling losses. Then he asks for the material a month or two earlier to be on the safe side. Finally he lists an extra 5% of scarce shapes to care for possible changes in design. Each of these inflations is pyramided one on top of the other and the sum of all must be allotted by the Claimant or the schedule cut. The result is an excess of one-third or more. And it is a specific error, made on a specific product, which must be granted or the production cut. Because of the thousands of products involved, there is no choice. Each Bill must be accepted at its face value.

Watchword or Epitaph

Under horizontal allocation the allotment covers many estimates. These too may be inflated but they cancel one another out. The material may be used interchangeably on any of the manufacturers' approved schedules. An over-estimate on the transmitter will offset an under-estimate on the receiver. The margin of error will be less. For it will be averaged out.

Under CMP there is no substitute for accuracy.

CMP will be exactly as good or as bad as its Bills of Materials.

Those words should be engraved over the portals of the W.P.B. as a watch-word.

For they make a better watch-word than they do an epitaph.

For **RUSH** War Jobs Order **Cullman Sprockets**

More than 50,000 Cullman Sprockets are available from stock for immediate delivery.

Because of specialized equipment and experience, Cullman Sprockets can be made to your specifications in a relatively short time, and at minimum cost.

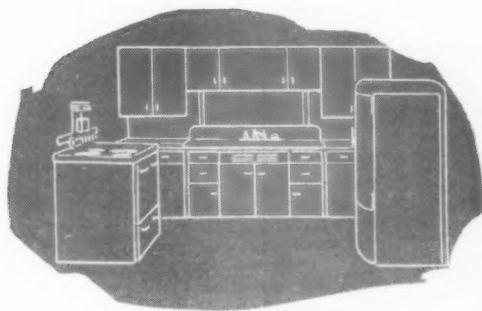
Write, telephone, or wire Cullman on any sprocket requirements.



CULLMAN WHEEL CO.
1352-P ALTGELD STREET, CHICAGO, ILLINOIS

When writing advertisers please mention Purchasing

WE GOT OUT OF THE KITCHEN



IN A BIG WAY



The American kitchen—the heart of the home. *** When women were urged “to get out of the kitchen” it was merely to suggest that by better, more efficient and economical equipment they would have time to explore the rest of the home and have added leisure. *** Well, we helped a lot in that era, processing formed steel sinks, steel kitchen cabinet equipment, metal refrigerator stampings for the



American way of living. So after Uncle Sam has arranged the Peace, we intend to continue to explore. It might not necessarily be back to the kitchen for us, but with what we have learned at American Central, and with what we intend to remember after our tremendous war effort, we know it should be of great value to the new American Home. The victorious peace will find us still serving in a Big Way

AMERICAN CENTRAL
MANUFACTURING CORPORATION

CONNERSVILLE • INDIANA

When writing American Central Manufacturing Corporation please mention Purchasing



A "DIMOUT" here
means poor work . . . danger



**STANLEY "FLUD-LITE"
EYE SHIELDS**
improve the work,
protect the worker

Stanley "Flud-Lite" Eye Shields PROVIDE TWO-WAY PROTECTION. Abundant light, directed on the work, reduces the possibility of injuries. Sturdy Safety Glass protects the eyes from flying particles. Because they *see* better, new unskilled workers do better work.

30% MORE VISIBILITY. Two light bulbs with reflectors floodlight the work area. The large, 6" x 4" window of Safety Glass permits the operator to watch the work closely without danger. The shield is adjustable up and down, to suit the position of the operator. It cannot be moved to a non-guarding position without dismantling.

Check up on the dangerous "dimout" grinders in your plant and install Stanley "Flud-Lite" Eye Shields on the wheel guards of all types of motor and belt driven grinders. Your Stanley Distributor can supply you. Write for descriptive literature.



1843 **STANLEY** 1943

STANLEY ELECTRIC TOOLS

STANLEY ELECTRIC TOOL DIVISION
THE STANLEY WORKS, NEW BRITAIN, CONNECTICUT

WHERE DO WE GO FROM HERE?

(Continued from page 78)

asthmatic pug dog. The old radio isn't even good for a Bronx cheer. The vacuum cleaner spits out more dust than it takes up, and the washing machine just won't wash nohow. Mother and the girls will almost have forgotten what silk stockings are like.

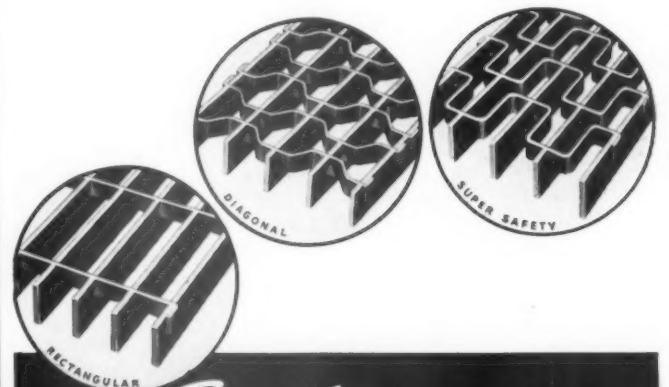
To take of these, and other things, father will be expected to produce from the old sock the needed mazuma.

Can he do it? There will be some needs and many wants and there may be some holes in father's socks. The net spendable savings, after the post-war hiatus in earnings is over, and people settle down to steady work may prove to be not enough for much of a splurge; and there will be a tremendous effort to gather in this money by installment selling and other gambles in futures. The over-time stuffing now in the pay envelope will be missing.

Blocs and Taxes

And taxes? We ain't saw nothin' yet. Hitler may pay some of his war expenses from the loot of other nations; but this country is above that kind of skull-duggery, and besides, there won't be anything left to loot. After the last war we advanced fabulous sums to help other countries to get on their feet, and what happened to the money? Perhaps in self-defense we may have to do the same thing again; and if we do, all we will get out of it is taxes. Even Uncle Sam's vast credit may be found to have a limit; and the proceeds

(Continued on page 212)



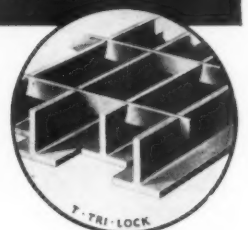
Specify
TRI-LOK

OPEN STEEL FLOORING • SAFETY STEPS
CONCRETE ARMORING T. TRI-LOK

DRAVO CORPORATION
300 PENN AVENUE, PITTSBURGH, PA.
REPRESENTATIVES IN PRINCIPAL CITIES



Full descriptive catalog
of Tri-Lok Grating, Safety
Treads and other prod-
ucts on request.



When writing advertisers please mention *Purchasing*

Wartime Adhesive Service



ROUTINE CALLS: With many of our Service Engineers now in military or Government positions, and others handicapped by restrictions on gasoline, tires, etc., routine calls will be minimized. However, our service to you will always be our first concern. If you will let us know when you need help or service, we will see that a capable man is available to you on short notice.

DELIVERIES: These take longer today. Please watch your stocks and order well in advance. Also, if possible, increase the size of individual orders.

CONTAINERS: Larger unit packages not only save money and floor space, but help relieve the container shortage. Please send back all returnable containers to us, properly coopered, as soon as empty. Note, too, that some types of containers are no longer available.

PRIORITIES: If you have, or can obtain, a preference rating applicable to the products we furnish, please extend it with your orders, and give us the proper symbols. We must have these so that we, in turn, can protect our requirements of chemicals and other raw materials, maintenance supplies, transportation facilities, etc. which are necessary to our operation, and hence to our ability to serve you.

Your full cooperation will help us to help you.



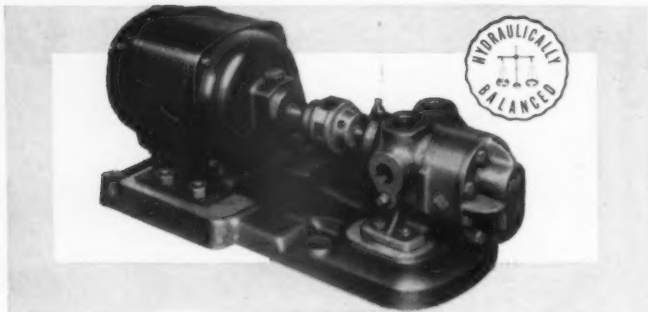
NATIONAL ADHESIVES

DIVISION OF

NATIONAL STARCH PRODUCTS INC.

820 Greenwich Street, New York

"You Can Rely on Roper"



Why the Roper Pumping Principle Has Earned Top Ranking

The Roper Principle is the simplest ever designed. Only two moving parts . . . *equal size pumping gears* . . . operating in a case with proper clearance so there is no perceptible wear on case or gears.

Roper Pumps, quiet and smooth in operation, do last longer because of their simplicity and because internal pressure is equalized at all points. Pumping gears actually float in operation, being entirely separate from the drive shaft and connected by a smooth, sliding joint which absorbs all shock and thrust.

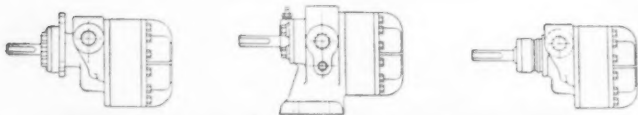
Another good design feature . . . gears and bearings can be inspected without disturbing piping or power. Type of gears optional . . . Spiral Gears for applications requiring high efficiency and practically silent operation at high speed . . . Spur Gears for high volumetric efficiency at maximum pressure.

Automatically lubricated Bearings . . . Built-In Relief Valve . . . Rigid one-piece Backplate carries the load of all pipe connections and protects working parts from stress and strain.

Roper Pumps are built to last a long time . . . and they do!

Custom-Built Performance from Standard Models

Capacities from one to 1000 gallons per minute . . . pressures up to 1000 lbs. per square inch . . . speeds up to 1800 r.p.m. . . . 21 drives and mountings . . . eight piping arrangements.



ROPER

Rotary Pumps

Write for Catalog 937. It contains a summary and a digest of valuable information on pumps and pumping problems.

GEO. D. ROPER CORP., ROCKFORD, ILL.

"You Can Rely on Roper"

(Continued from page 210)

of bonds may not be as great as we hope. After the last war so many people had to hock their Liberty Bonds that the price went away down; and history has a way of repeating itself.

We shall have the clamor for bonuses and pensions. We shall have the farm and silver and labor blocs shaking threats of lost votes in the faces of aspiring candidates for office. We shall have to take goods from foreign countries in trade because there won't be anything else with which these countries can pay. And then there will be the howl about the ruin of constituent industries by the pauper labor of Europe, Asia, Africa and Polynesia.

Congress may be in the position of the lady whose bank notified her there wasn't any more money. She wailed: "Why, I have a lot of blank checks left in the book!"

Learning to Sell

Our great commercial idea over the years has been to have everything cost as much as possible. We have tugged at our bootstraps for years trying to make ourselves pay the highest prices for everything. I think it's time to ponder the thought in Mr. Ford's mind when he let loose his millions of mechanical cooties over the continent. Make 'em cheap enough so that people can afford to buy. We shall have to make prices that people can afford to pay and terms that won't ruin them in paying. I have always believed that a factory can make more and better progress working full time at a small or moderate profit, than in working part time at a large

(Continued on page 214)



Right in der Fuehrer's face

That's what Eagle Oilers are doing today. They are lubricating the tanks, guns, airplanes and ships, that are making Hitler worry.

So if you can't now get all the Eagle products you want, you'll know that Uncle Sam, like you, knows quality—and he comes first. And when that job is done, we will be able to fill your order more promptly.

EAGLE MANUFACTURING COMPANY

Wellsburg West Virginia

When writing advertisers please mention Purchasing



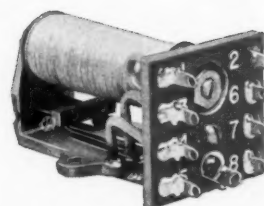
FROM SIGNAL LIGHTS TO SIGNAL CORPS



RELAYS BY GUARDIAN

★ Where formerly "Relays by Guardian" were used in such peacetime applications as signal lights . . . all "Relays by Guardian" have now gone to war. For example, the BK-10 relay handles two-way radio communication in several types of "Walkie Talkie" units.

It facilitates switching over from "send" to "receive." Built for operation at 12 volts, the BK-10 relay makes and breaks contacts firmly when the potential is reduced to 9 volts. Contact combination is made up of two stacks, one being single pole, double throw—the other 1 make, 1 break. Contact points are highly tarnish resistant sixteenth-inch palladium. The compact, light weight BK-10 relay weighs four ounces and measures $3\frac{1}{8}$ " x $1\frac{1}{2}$ " x $1\frac{3}{8}$ ". It is built to U. S. Army Signal Corps specifications.



Series BK-10 Relay

Planning for today or post-war? Send for Bulletin 195 describing this and other "Relays by Guardian" used in aircraft, ground and mobile communications.

GUARDIAN ELECTRIC

1635 WEST WALNUT STREET CHICAGO, ILLINOIS

A COMPLETE LINE OF RELAYS SERVING AMERICAN WAR INDUSTRY

When writing Guardian Electric please mention Purchasing

WHAT OF WIRE TODAY?



Yes! WHAT OF WIRE?

There is little prospect for improvement in delivery or allocation conditions. *Be Scotch as you handle wire you must have.*

FOR SHAPED WIRES it is good sense to use only standard analyses and shapes.

FOR WELDING WIRE, start right by insisting on getting wire of correct analyses, of proper characteristics for the kind of welding you are doing and of the diameter for greatest efficiency—leaning toward larger sizes. Don't permit bending of electrodes. See that there is no wasteful, excess deposit in the weld. Insist that each electrode is used down to the holder.

FOR GENERAL WIRE, eliminate "specials" from specifications if you have not already done so and, again, see that there is no waste.

If we can help, call on us—remembering that the wire needs of the armed forces and those working directly for the war effort have first call, as you would have it.

PAGE FOR WIRE

PAGE STEEL & WIRE DIVISION

Monessen, Pa., Atlanta, Chicago, New York, Pittsburgh, San Francisco



In Business for Your Safety

AMERICAN CHAIN & CABLE COMPANY, Inc.
BRIDGEPORT • CONNECTICUT

(Continued on page 212)

profit. And as to large earnings, page Uncle Sam! If there are any excess profits he will find a way to get 'em, and don't you think he won't.

We have led the world in material progress. We have shown that we can out-invent, out-produce, out-think industrially all the nations of the earth. But we have shut this ability up within our national boundaries; and we haven't learned to out-sell the rest. World trade is something we have feared because we would have to cut our profits, and so we haven't done what we might.

A Job for the P.A.

I believe there is a time of stress ahead of us. For the time being there is a war on, and we do what we can. But when the war is over and the real pressure is on, that pressure will prove what Purchasing Agents are for. Some doubts have been expressed on that subject. Quite so, the Purchasing Agent has progressed, from being regarded as a sort of business vermillion appendix, to a position where it is recognized he may be important. Associations of Purchasing Agents have no doubt helped this progression. They can help still more. But from now on, what the Purchasing Agent must get into his head is that no matter how efficient manufacturing and selling may be, the third of the triumvirate, buying the stuff right, is just as necessary. And management, wielding the trident of purchasing, manufacturing and selling, must be damned sure the three prongs of his weapon are equally strong, equally well tempered, and equally keen.

(Continued on page 216)

* Outside of Helping "Grind the Axis"

We Have No Axe to Grind!



Felt Products Mfg. Co. does not limit itself to the manufacture or use of any one kind of sealing material. Therefore, we have no reason for promoting the sale of any particular type of Gaskets, Stripping, Moulding or Mechanical Packing. Our only consideration is "What material will best meet the needs of this sealing job?" — And if there is no such material, we try to develop one.

For example, to meet certain industrial sealing requirements put up to us, Fel-Pro developed such materials as Lignoflex (highly resistant to petroleum products, strong chemicals and high compression.) See the complete range of Fel-Pro sealing materials.

Write for Your Copy of FEL-PRO Material Sample Folder

Contains an actual sample of each of 36 Fel-Pro Sealing Materials; also technical data and application suggestions. If none of them meets your needs, consult Fel-Pro's Special Development Staff.

* To meet military needs for an ammunition box sealing material, a newly developed Fel-Pro material is being used. In addition to rubber-like characteristics, this material has the advantage of resisting poison gas seepage.

★ ★ ★ ★
Put It Up to FEL-PRO for solutions to problems involving GASKETS, MOULDING, STRIPPING, MECHANICAL PACKING and other types of Sealing Materials.

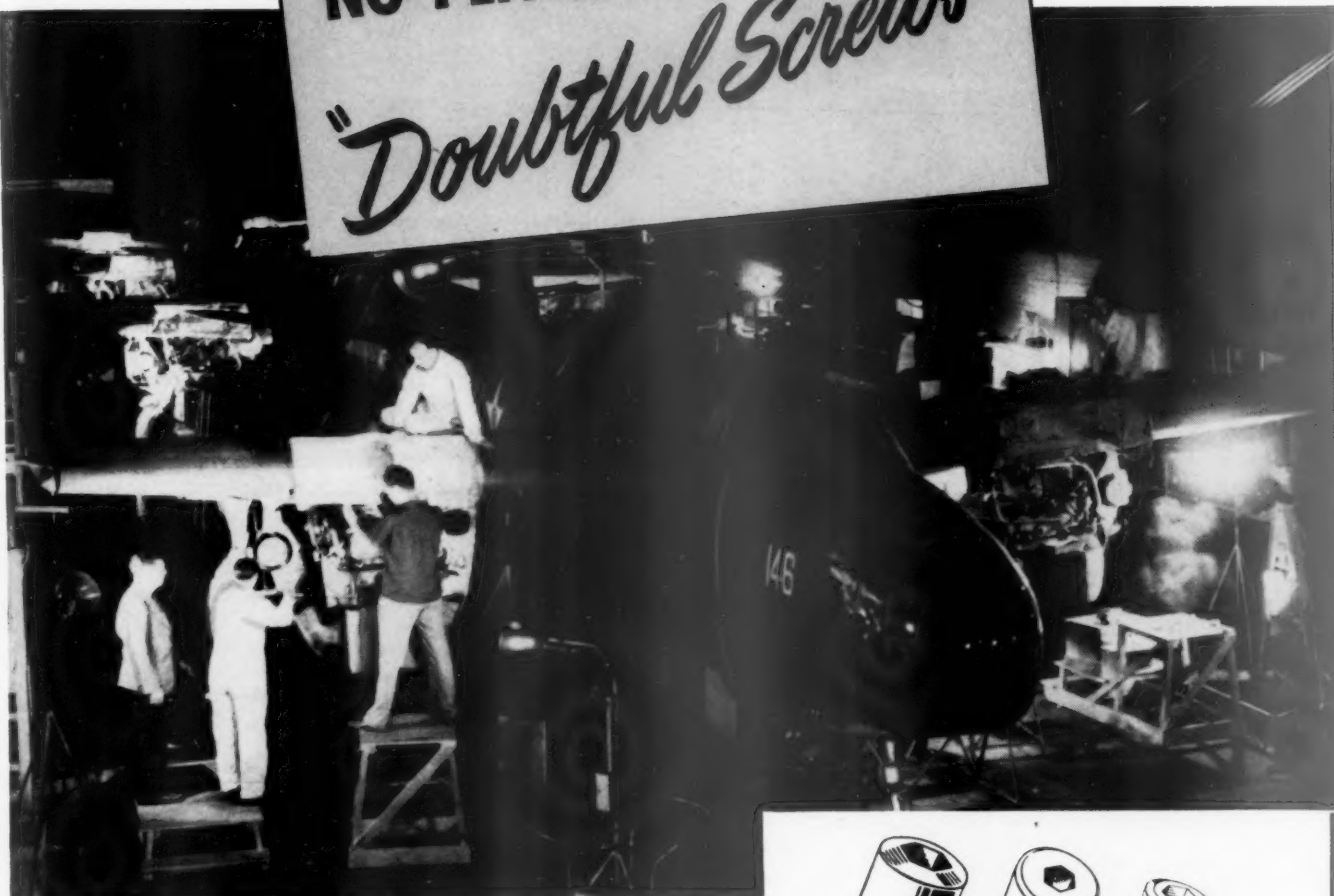


**FELT PRODUCTS
MFG. CO.**

1514 CARROLL AVENUE, CHICAGO, ILLINOIS

When writing advertisers please mention Purchasing

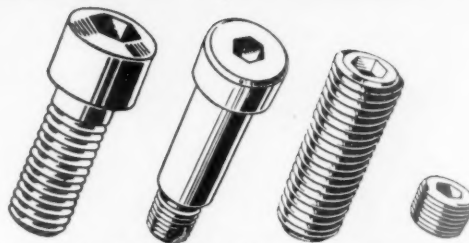
NO PLACE FOR
"Doubtful Screws"



-In Fighting Equipment that Must "Take It"!

Allies and enemies alike express amazement over the amount of punishment that American planes and combat cars will take. American engineers and production men have disproved any idea that they couldn't build fast and build well, too. While they've put on night shifts . . . speeded-up in a thousand ways . . . they've refused to take chances with "doubtful materials". And, in their insistence that every integral part must conform to rigid standards, lies the reason why Parker-Kalon Quality-Controlled Socket Screws are "on the preferred list" of so many makers of planes and engines, combat cars and trucks.

P-K Socket Screws have the extra dependability that severe service requires. "Doubtful screws" . . . screws that *look* all right but some of which fail to *work* right . . . are eliminated by the unequalled quality-control routine of the Parker-Kalon Laboratory. This assurance covers all physical and mechanical characteristics . . . yet P-K Screws cost no more. Parker-Kalon Corp., 192-200 Varick St., New York.



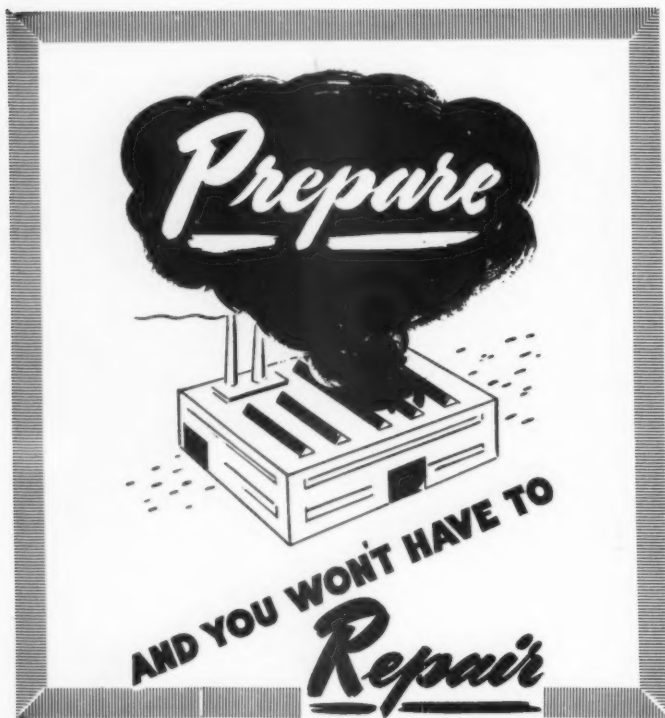
"Quality-Controlled" means . . .

Complete test and inspection covering; Chemical Analysis; Tensile and Torsional Strength; Ductility; Shock Resistance under Tension and Shear; Hardness; Head diameter, height and concentricity; Socket shape, size, depth and centrality; and Thread fit.

PARKER-KALON
Quality-Controlled
SOCKET SCREWS

Give the Green Light to War Assemblies

When writing Parker-Kalon Corp. please mention Purchasing



Today, the slightest slow-down of production is more than ever a national calamity. Justrite Safety Products—designed and built to rigid safety requirements—stop the careless or forgetful fire before it starts.

JUSTRITE Safety Products



JUSTRITE SAFETY FILLING CANS prevent spilling — splashing — waste — wherever explosives or flammable liquids must be poured into fuel tanks, etc. Sturdily built of 24 gauge steel in 4 sizes from 5 to 20 quarts. Approved and listed by Underwriters' Laboratories, Inc.

JUSTRITE SAFETY CANS similar in construction to the above but without flexible spout are made in 7 sizes, from 1 pint to 5 gallons. Approved, labeled, and numbered by Underwriters' Laboratories, Inc.

OILY WASTE CANS for safe storage of oily waste and rags, with or without foot pedal — either model closes automatically. Made in 4 sizes from 6 gallons. Approved by Underwriters' Laboratories, Inc., and Factory Mutual Fire Ins. Co.

PLAY SAFE — INVEST IN SAFETY — NOW

Ask your jobber, or write direct for catalogs and prices.

JUSTRITE MANUFACTURING COMPANY

2091 Southport Ave.

Chicago, Ill.

JUSTRITE *Safety Products*

SAFETY CANS • FILLING CANS • OILY WASTE CANS
APPROVED SAFETY ELECTRIC LANTERNS

(Continued from page 214)

The Purchasing Agent, because his job can't be measured in totals of sales, in units of production, but is entirely thought of in terms of incoming materials the boss has to find money to pay for, has no standard by which his worth may be measured in terms of cash. But, if you didn't have to walk, you wouldn't miss a hind leg so much. The very efficiency of a Purchasing Agent, the ease with which he keeps the stuff sliding through, operates against an estimate of his value. But lay him up a few weeks in a busy season with appendicitis or a golf knee and see what happens.

The Purchasing Agent must deliver the goods. The smarter he is, the farther afield he will range to keep his concern ahead of the game. And I think the Associations of Purchasing Agents are now big and strong enough to turn their attention, not so much toward the aggrandizement of associations, as toward raising the standards of individual achievement in purchasing.

And it is here that the serious friction of mind against mind; in each man trying to extract from his fellow-members the best they have in experience and advice; and in return giving of his best when called upon to do so; in the profitable utilization of pleasant acquaintance—that is going to make association work count. Whether he will admit it or not the purchasing man doesn't exist who can't learn something from the most insignificant of his fellow association members, something he ought to know and doesn't. It is high time to make this bleary-eyed business world "Purchasing-Agent-minded."

The post-war era should be a new era for the man who buys the goods.

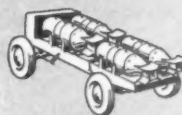
WHEELS for ARMY NAVY AVIATION and INDUSTRY



BOGIE WHEELS



for LAND and AMPHIBIAN TANKS, HALF CRAWLERS and TRACTORS



WHEELS for BOMB CARTS

We offer complete facilities for the Design, Development and Mass Fabrication of WHEELS in many sizes and types, standard or special, including

STEEL SPOKE

CAST

PRESSED STEEL

PNEUMATIC TIRED

SOLID TIRED

ETC., ETC.

Our Foundry facilities welcome the opportunity of handling your requirements for castings. We invite your inquiries.

Please Address Dept. P

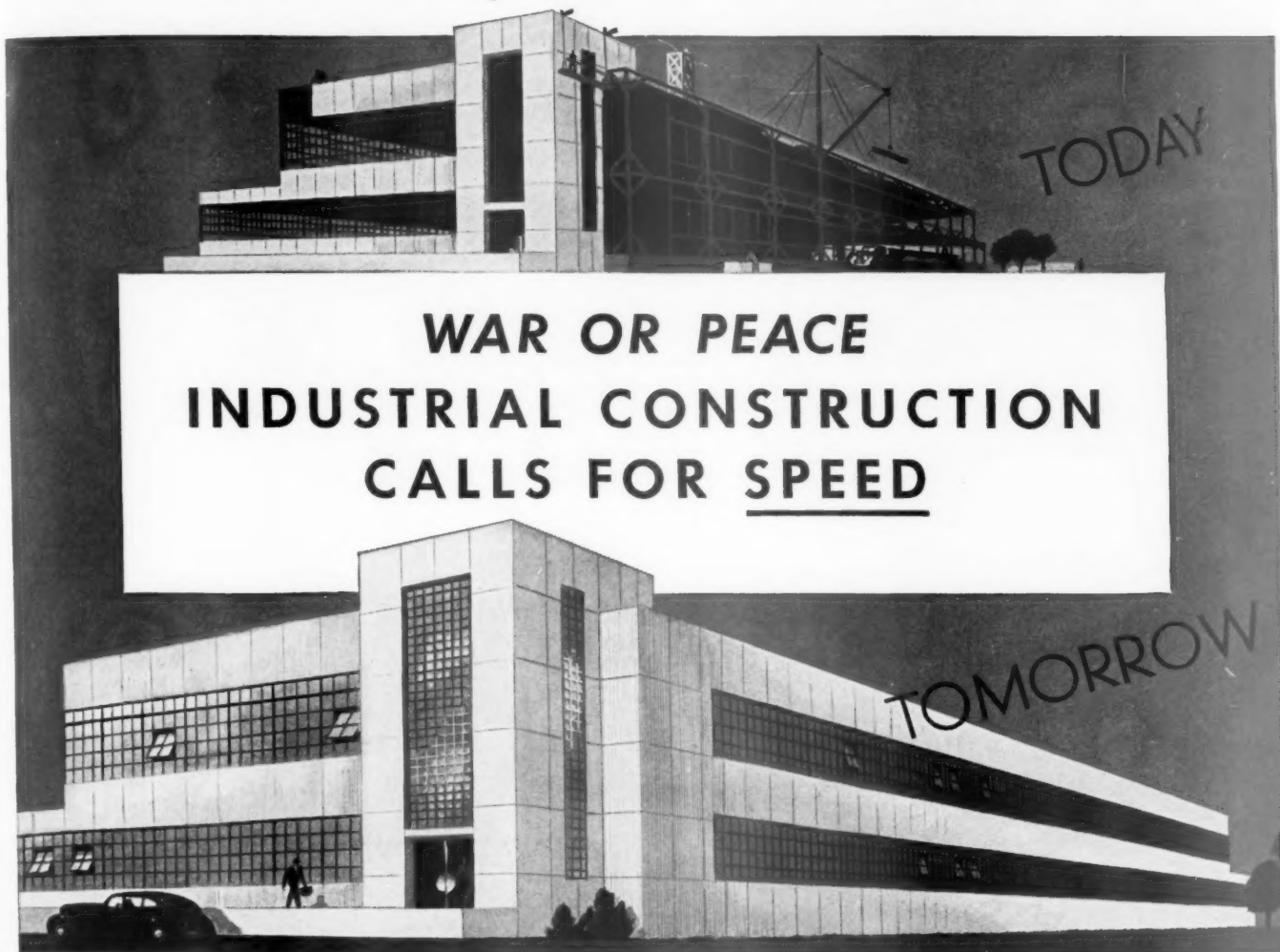
FRENCH & HECHT, INC.

DAVENPORT, IOWA

WHEEL BUILDERS SINCE 1889

When writing advertisers please mention Purchasing

Looking ahead with Asbestos



WAR OR PEACE INDUSTRIAL CONSTRUCTION CALLS FOR SPEED

ONE of the most put-to-work materials in this period of unparalleled war construction has been—and is—K&M "Century" Asbestos-Corrugated and Flat Lumber.

Here's reason number one why Army and Navy air bases and vital war plants have made vast use of this Keasbey & Mattison building material for roofs and sidewalls: Its erection speed is up to the terrific tempo of a desperate war. An advantage which will surely find wide favor in post-war construction.

Besides this all-important speed factor, "Century" Asbestos-Corrugated and Flat Lumber resists fire and water, is rot-and-rust proof,

seldom needs repairs or protective treatment, grows tougher with age.

These are outstanding qualities for a building material to possess, whether the construction is for war or peace. When the war is over, and K&M "Century" Asbestos-Corrugated and Flat Lumber can flow again into peace-time channels, Industry will be eager to give it much to do. Just as Industry will also find use for those new products which K&M's intensive research into asbestos will develop.

* * *

Nature made asbestos;

*Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind... since 1873*

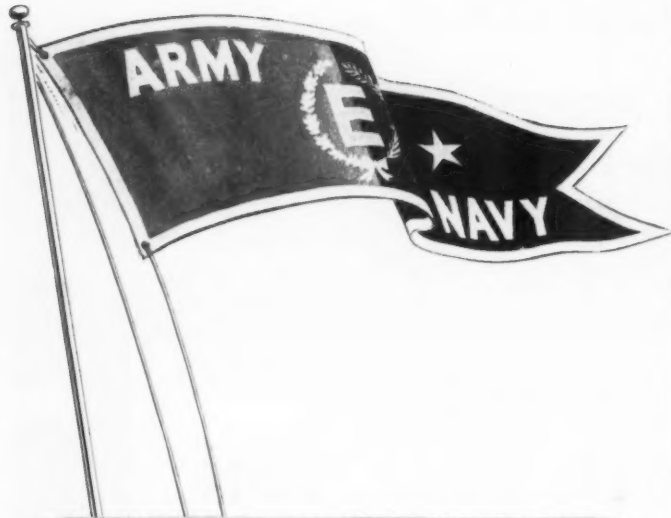
KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbars; asbestos-cement pipe for water mains

When writing Keasbey & Mattison Company please mention Purchasing





For Excellence

IN WAR PRODUCTION

Receiving the Army-Navy Production award in the year of the one hundredth anniversary of The Stanley Works is more than a coincidence. Let us all be mindful of the fact that the men and women of American Industry have a duty above and beyond working for wages and profits. In war or peace, ours is the job of helping build America and keeping her strong and free. If our century of growth and experience had done nothing more than to fit us for our present service to the nation, it would have been worthwhile. The Stanley Works, New Britain, Conn.

1843 **STANLEY** 1943
TRADE MARK

"AND WE'RE KEEPING
AT IT UNTIL THE
JOB IS DONE!"



PURCHASERS MAY AVOID LEGAL PITFALLS

(Continued from page 96)

disclosed that a disagreement became apparent between two contracting parties. Suit was instituted by one of the contracting parties on the contention that certain acts and statements of the other party *indicated* that he had *intended* breaching contract. The court promptly held that a contracting party is not liable for assertions of this nature because no breach is made until the party fails to fulfill his obligations. This court said:

"The mere assertion of a party to a contract that he will be unable, or will refuse to perform his contract, is not sufficient to constitute a breach. There must be a distinct, unequivocal, and absolute refusal to perform, treated and acted upon as such by the other party to the contract. A mere assertion of inability to go on with the contract is not a repudiation of the contract."

Failure to Read Contract

As above explained, any person who signs a valid contract is liable in damages for failure to fulfill the assumed obligations, unless it is shown that the other party to the contract practiced fraud or misrepresented facts for the purpose of inducing signing or making of the contract. And this rule of law ordinarily is applicable with respect to persons who sign contracts without reading the same. Therefore, neither contracting party may avoid liability for breaching a valid contract on the grounds that he did not understand his legal obligations, or that he failed to read the contract. Such neglect is his loss.

(Continued on page 220)

CLASS 3.00

Builders of military vehicles have learned that PROGRESSIVE fastenings meet war's demands and really **stay put**. In WPB Class 3.00, as in 20 other Allocation Classifications, PROGRESSIVE special fastenings are specially good...

The PROGRESSIVE MFC. CO.
TORRINGTON · CONNECTICUT

FOR VICTORY
BUY UNITED STATES WAR BONDS AND STAMPS

QUALITY PROMCO BRAND

When writing advertisers please mention Purchasing



High in the regard of tap users during the years of peacetime progress in the mechanical industries; WINTER TAPS now meet the exacting demands of war.

The Winter Brothers familiarity with tapping problems—plus WINTER ACCURACY in manufacturing—insures more perfectly threaded pieces for the assembly room.

Make every effort to reach the highest production possible from your taps. Plenty of lubrication with tap and hole in good alignment will make a big difference.

A Division of

THE NATIONAL TWIST DRILL & TOOL CO.

Detroit, Mich.

Winter Brothers
COMPANY
Wrentham, Massachusetts, U. S. A.



When writing Winter Brothers Company please mention Purchasing

Check the features you
want in a work-bench . . .
you'll find them all in . . .

HALLOWELL

SHOP EQUIPMENT RIGHT SIZE



"Hallowell" ready-made Work-Benches are made in five heights and widths and in seven standard lengths from 3 to 10 feet. Any number can be joined end to end for a continuous work-bench. 1367 combinations available.

STURDY CONSTRUCTION



Constructed for long wear and made to stand firm and rigid without costly, time taking bolting to the floor.

CONVENIENCE



Pilfer-proof drawer units, shelves, cabinets, etc., are available to make the benches fit the job. Prices and deliveries are right.

Pat'd
and Pat's
Pending. Drawers are extra

For full details get our Shop
Equipment Catalog.

STANDARD PRESSED STEEL CO.
JENKINTOWN, PENNA. BOX 590

BRANCHES
BOSTON • DETROIT • INDIANAPOLIS • CHICAGO • ST. LOUIS • SAN FRANCISCO

(Continued from page 218)

For illustration, in the late and leading case of Sharpless, 155 Atl. 247, it was disclosed that a contracting party signed a valid contract, and later attempted to avoid liability and cancel it on the grounds that he did not read it and, therefore, was not fully obligated since he did not realize the obligation.

Notwithstanding this argument the higher court held the contracting party bound to perform all obligations assumed under the contract, and said:

"If one can read his contract, his failure to do so is such gross negligence that it will stop him from escaping its obligations, unless he has been dissuaded from reading it by some trick or artifice practiced by the opposite party."

Beware of Public Policy

Modern higher courts hold that contracts contrary to public policy are those which are injurious to the public or against the public good. Such contracts are illegal and void, even though actual injury does not result therefrom.

For example, in Uvalde Construction Company v. Shannon, 165 S.W. (2d) 512, reported November, 1942, it was disclosed that a seller brought suit against a purchaser to recover damages for breach of an alleged oral contract for the purchase of a stipulated quantity of merchandise.

During the trial testimony was given to the effect that the seller had obligated himself not to furnish information concerning similar merchandise to competitors of the purchaser and not to sell merchandise to such

(Continued on page 222)

GENERAL INDUSTRIES

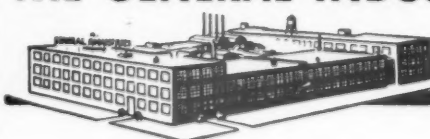
Precision-made
devices

FOR WARTIME APPLICATIONS

For forty years General Industries has been a leading producer of small-power motors, record changers and recording devices for domestic and commercial needs. The plant is now devoted entirely to war production. Manufacturers working on Government orders requiring accurately made mechanical products are invited to consult with G. I. engineers, and are assured of the fullest measure of cooperation.

THE GENERAL INDUSTRIES CO.

ELYRIA, OHIO



When writing advertisers please mention Purchasing



Your shipping room may be a Saboteur's Target!

■ At this very moment, war products which your plant turns out may be in serious peril. A saboteur may lurk in your shipping room . . . a dangerous enemy that can destroy war products before they reach our fighting men!

That saboteur is commonly known as Defective Packing Protection. It's a saboteur you can defeat with the help of KIMPAK*—the remarkable protective material that does much to assure the safe delivery of war products. With KIMPAK-protection, they are cushioned from jolts, jars and rough handling in transit . . . for KIMPAK combines softness with resiliency. Breakage, chipping and chafing are well-guarded against. And because KIMPAK is 100% grit-free, highly polished

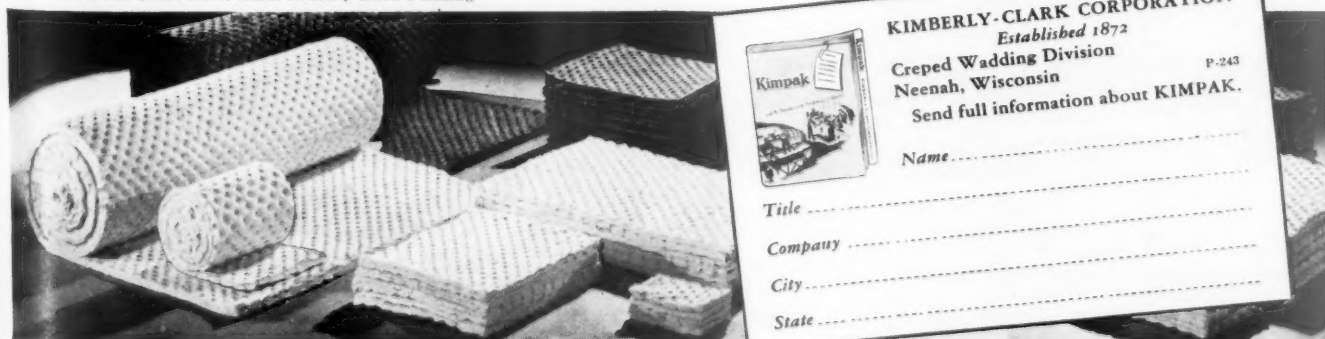
surfaces are shielded against scratches, press markings and "burning" . . . If your war product must be protected against moisture, there's a special *moisture-resistant* KIMPAK to do the job. And if leakage from glass containers is your problem, there's a KIMPAK that can absorb 16 times its own weight in liquids!

Manufacturers of metal, plastic, wood and glass war products are finding KIMPAK the right answer to their packing protection problems. Whether *your* war product is as large as a bomber's wing or as small as a wrist pin, KIMPAK can serve you, too!

KIMPAK is supplied in many different standard thicknesses and sizes, in sheets, pads and rolls. Write for details today.

PACK WITH
Kimpak
REG. U.S. PAT. OFF. & MAR. TRADEMARK
CREPE WADDING

*KIMPAK (trade mark) means Kimberly-Clark Wadding



KIMBERLY-CLARK CORPORATION
Established 1872
Creped Wadding Division
Neenah, Wisconsin P-243
Send full information about KIMPAK.
Name

Title

Company

City

State

When writing Kimberly-Clark Corporation please mention Purchasing



What's More Important to Buy for Your Plant than *Accurate Control-by-Count?*

If you could gear your production-control to up-to-the-minute "news bulletins" delivered in black and white by each production machine and process . . . *you'd have something there.* And scores of plants have obtained this time-saving, output-boosting control by the simple expedient of installing Veeder-Root Counting Devices on all production machines and processes. Then management's reflexes become quicker . . . for it is possible to make the slightest adjustment as soon as it's shown to be necessary by the accurate facts-in-figures that are continuously supplied. If your production counts directly toward Victory, you can count on Veeder-Root, now. Veeder-Root Inc., Hartford, Conn.

VEEDER-ROOT

INCORPORATED
HARTFORD, CONNECTICUT

OFFICES IN Boston, Chicago, Cincinnati, Cleveland, Detroit, Greenville, S. C., Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, Montreal, Buenos Aires, Mexico City, London, Melbourne. In England: Veeder-Root Ltd., (New address on request). In Canada: Veeder-Root of Canada, Ltd., Montreal.

(Continued from page 220)

competitors in order to enable the purchaser to sell the merchandise upon more favorable terms.

The higher court refused to allow damages to the seller, and said:

"The contract in question undoubtedly tended to lessen competition . . . By the way of examples of contracts contrary to public policy is that they tend to be injurious to the public or against the public good, includes contracts to stifle competition . . ."

1 1 1

PURCHASING IS A WEAPON

(Continued from page 67)

3. The employment of importers may, of course, be limited either by difficulties with the OPA price ceiling or by the impossibility of arranging a workable basis with the importers. Policy is to give importers an opportunity to suggest a satisfactory method of operation, but if they are unable to suggest a method of operation after having been given an opportunity to do so, it is up to the BEW to decide whether to devise a basis for using the importers or to resort to direct Government purchase.

4. Where the "hides" method or the exemption method is employed, the BEW loses a good deal of control over the progress and cost of acquisition of materials under the program. Consequently where the commodity is an important one, and it is important to retain strict control over the rapid acquisition of ma-

(Continued on page 224)

WHAT IS THE

4th

DIMENSION

in Springs

?

— those hard-to-dig-out factors which insure our giving you . . . not merely the spring you ordered . . . but the **PERFORMANCE** you WANT.

LEE SPRING CO., INC.
30 MAIN ST., BROOKLYN, N. Y.

Ask About SCIENTECH Spring Service

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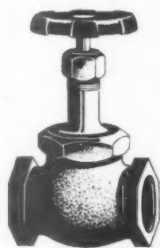
SABOTAGE!

DON'T ALLOW ANY OF YOUR
MEN TO FORCE A VALVE

Failure to close off is usually caused by foreign matter lodged on the seat. Usually it clears away when the valve is opened part way to flush it.

Don't try force to close it off. That may scar disc and seat—giving you a permanent leak of another sort—and even though seats and discs require relatively little material, the metal they use is on the critical list. Waiting for new parts might cripple plant efficiency—sabotage, in wartime.

Where do your men apply grease, lead or paint to valve connections?



Instruct them when reassembling valves to their lines to put joint compound on the pipe threads—not on the valve threads from where the excess will be forced inside the valve and possibly onto the valve seat.

Before reassembly, see that valve and line are both blown out—or seats may be ruined by dirt and grit.



Write to Reading, Pa., general office, for copy of "VALVE DON'TS"—a poster for plant use that tells things NOT to do to valves.

READING-PRATT & CADY

MANUFACTURERS OF
READING CAST STEEL VALVES AND FITTINGS • PRATT & CADY BRASS AND IRON VALVES
D'ESTE VALVE AND ENGINEERING SPECIALTIES



A DIVISION OF

Reading, Pa., Atlanta, Boston, Chicago, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco

AMERICAN CHAIN & CABLE COMPANY, Inc., BRIDGEPORT, CONNECTICUT

When writing Reading-Pratt & Cady please mention Purchasing



AIR EXPRESS TONNAGE GAINS 93.6%

"The impetus given by the war to AIR EXPRESS operations... is indicated in figures for the first ten months of 1942 showing a rise of 93.6 per cent in pounds carried... Despite release of about half of commercial air-line equipment to the Army early in the year, nevertheless, by rearrangement of schedules, increasing plane hours a day, and stepping up plane maintenance and servicing, air lines are equaling and even surpassing pre-war performance."

Excerpt from *New York Herald Tribune*, January 11, 1943

Although you do not need a priority to ship by AIR EXPRESS, if you have war production shipments requiring priorities, they will be granted. Phone Railway Express Agency, AIR EXPRESS DIVISION, or any air line.



NOW IN ITS 16th YEAR

AIR EXPRESS

Division of RAILWAY EXPRESS

(Continued from page 222)

terials, it is sometimes held desirable to institute Government purchasing notwithstanding the policy considerations outlined above.

The operations of the BEW to support the economies of friendly and allied nations are largely centered in the Latin American countries. Many of the countries and islands to the south are economically dependent upon one crop or product. Cuba and the West Indies economies hinge on the sugar crop. The coffee growing nations, particularly Brazil, have a large dependence upon the United States market.

Due to the shortage of shipping space, it has been impractical to allocate unlimited shipping space to bring these products to the U. S. market.

The Axis approach to this problem would be to drain the countries so situated of whatever goods were wanted, and if the economies of the countries broke, to take the countries over by military occupation. The latter expedient serves to disperse the military strength of the Axis over a large territory, and makes the conquests continually uncertain.

The Board of Economic Warfare has gone into the Latin Americas and guaranteed the purchase of certain portions of the crops. In the case of coffee, Brazil was assured payment for the normal export quota of their crop. To the extent that shipping space can be allocated, the coffee is moved to the U. S. consuming market. The remaining stocks are stored in the country of origin to the U. S. account.

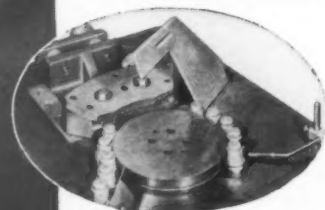
These accumulated stores of foods—coffee, sugar, and certain other products—will provide a stockpile from

(Continued on page 226)

FUSE MARKING with Matthews No. 201 Machine



All required data is marked on fuse bodies, fuse parts, or other round pieces with this fast production machine. Practically all sizes and models of fuses can be marked.



The insert, above, shows a close-up of how fuse parts are marked. Parts are carried around on the pressure dial table and are quickly and legibly marked when rotated between dial and steel type holder. Write for literature.



JAS. H. MATTHEWS & CO.

3959 FORBES ST. · PITTSBURGH, PA.

New York—Chicago—Phila.—Boston—Detroit—Newark—Syracuse

DISTRICT SALES OFFICES · CLEVELAND · HARTFORD · BIRMINGHAM

When writing advertisers please mention Purchasing



THE 29,161st ... A QUITTER?

THE MONSTER STOPS, betrayed. A tiny part within quits at some crucial place. One flaw in one of 40,000 metal pieces was enough to end its fight.

Tiny but tremendous bits of metal these, since one small part, imperfect, badly made, means mangled flesh and broken bones for some kid we knew or might have known!

What can we do to set against the life he gladly gives? We can swear Metal is a sacred trust, not to be spoiled or wasted. We can pledge Workman-

ship, care in it, speed in it, years of past patience brought to his burning present need, there in the desert.

We all can make our "Okays" absolute, study and plan and sweat to make each bit and part move with precision—to the minutest fractions!—hold ourselves sternly to his battle's grim accounting.

Such is the pledge of us who manufacture Empire bolts and nuts ("tremendous trifles", indeed) that serve our nation's might. To manufacturing

processes which insure maximum strength and greatest accuracy—we add the personal *energy* and *care* that will help make the most of R B & W's contribution to world Victory.

Posters for your War Production Drive, reproducing this ad but with an appropriate slogan replacing our signature, are available, *free*, upon request. Drive home to every worker the importance of war-essential "bits and parts". Write Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y.

RB&W *Making strong the things that make America strong*



When writing Russell, Burdsall & Ward Bolt and Nut Company please mention Purchasing



"and we have confidence in you!"

Yes, we have great faith in the ability and daring of our paratroopers. They have already proven themselves in North Africa . . . and they may soon be dropping in on Berlin!

Our fighting men have confidence that the "soldiers of production" will do their part back home. Let's justify the confidence they are placing in us . . . every day, every hour . . . till the war is won!



THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK
*Manufacturers of Garlock Packings,
 Gaskets and KLOZURE Oil Seals*
 In Canada: The Garlock Packing Company of Canada Limited,
 Montreal, Que.

GARLOCK

(Continued from page 224)

which food needs of the post-war period can be supplied.

In supporting the economies of the Latin American nations, BEW also aids these countries in warding off inflation. It has been the experience of nations that during an inflationary period production tends to fall off sharply. Instead of manufacturing being accelerated to meet war needs, inflation retards output, as manufacturers tend to hoard materials and products, rather than to sell them for a currency that may have little value. Outstanding example of this trend is the case in China, where inflation has cut the war output of Chinese industry to a small percentage of previous production rates.

The preclusive buying activities of BEW are simply an outright use of money as an expendable weapon. The procedure is to buy up in neutral countries material required by the Axis, as a means of preventing the Axis from making the purchase. Price is no object, and any method of purchase which achieves the objective is countenanced.

Prices paid may be as much as 20 times the market value, but as in the case of a purchase of tungsten or mercury where small quantities are of great value to war production, the overcharge can be written off as a casualty of war.

CUTTING TOOL PREFERENCE

Announcement has been made by the War Production Board that a purchaser may obtain preferential delivery of certain special cutting tools up to the lowest quantity that can be efficiently produced by the manufacturer, in an amendment to Preference Order E-2-b.

FACE and EYESHIELDS FOR EVERY PURPOSE



All types for welding, soldering, brazing, grinding, chipping, etc.



Thousands of men and women workers throughout industry find Pulmosan Face and Eyeshields preferable to goggles, because of their light, cool, comfortable, larger-area protection. Flexible, transparent shields are non-fogging, non-inflammable. Do not interfere with glasses. Available in 4, 5, 6, 7, 8 and 9 inch lengths. Clear or colored shields, in various constructions to meet every job condition. All parts replaceable. Write for literature and prices on Pulmosan Face and Eyeshields.

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At Bristol

*We've had our coats off
... since before the Civil War!*



Making Brass to win a war is a job that Bristol has helped to do *five times* in its life. So any sudden demand finds us with our coats off and sleeves rolled up, ready to roll in high gear right from the start. And that's why, today, this plant is exceeding peacetime speed-limits by greater and greater margins, in the production of high-quality sheet, rod and wire for shells, cartridges and other war material.

In fact, *action* has always been the word for Bristol. Brass-fabricators know they can always get it from this compact organization which never

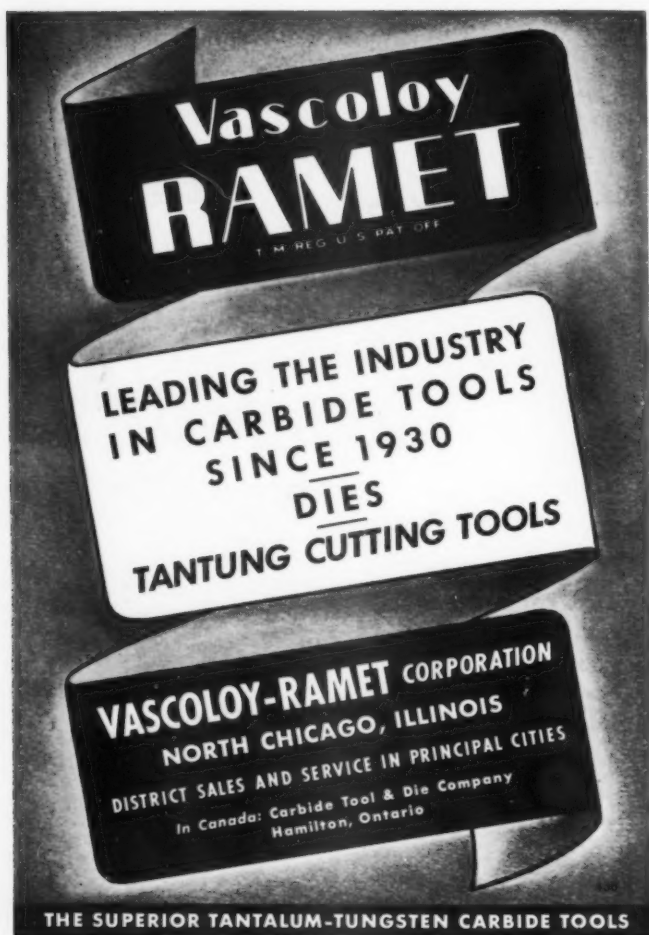
hid behind a roll of red tape in all its ninety-two years of operation. At Bristol, they know they can get their questions answered on the dot, and that the answers are on the button. And they appreciate the fact that no Bristol executive keeps them waiting on the phone or in the office. Time is saved and the product is right — be it sheet, rod or wire.

If you like to get your brass business done punctually and definitely, on friendly, informal, enjoyable terms, we'll be glad to hear from you, when the war is won.

THE *Bristol Brass* CORPORATION

MAKERS OF BRASS SINCE 1850 · BRISTOL, CONNECTICUT

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RAMET**
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**LEADING THE INDUSTRY
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VASCOLOY-RAMET CORPORATION
NORTH CHICAGO, ILLINOIS
DISTRICT SALES AND SERVICE IN PRINCIPAL CITIES
In Canada: Carbide Tool & Die Company
Hamilton, Ontario

THE SUPERIOR TANTALUM-TUNGSTEN CARBIDE TOOLS

REPAIR OF FINISHED CASTINGS BY WELDING

(Continued from page 91)

to be maintained. From the standpoint of safety, a casting which has been radiographed and repaired by welding is considered much more dependable than a casting which has not been radiographed. This is an important consideration when the castings involved carry high temperature, high pressure steam, for a sound casting presents less danger to the operating personnel. A casting which has been repaired during manufacture also means that less operating time will be lost because of necessary repairs after the ship has been in service for some time, since an internal defect will sometimes pass hydrostatic and other routine tests only to work its way to the surface of the casting under operating stresses.

1 1 1

CENTRALIZED BUYING URGED

A recent issue of *Nation's Business* discusses some of the difficulties encountered in municipal administration under the necessary limitations imposed by wartime conditions. The conclusions of the article are summarized in a twelve-point program. Suggestion No. 2 is:

"Centralize purchasing. Big cities can do this alone. Small towns can get together on a cooperative purchasing basis with neighboring towns. City and county have been combined successfully. In New York State, the law permits local governments to buy through state agencies. Savings up to 50% have been reported."

TWO GREAT NAILS

Speed War Production

BUILD SUPER STRENGTH AND LONGER USEFUL LIFE INTO ALL TYPES OF WOODEN ASSEMBLIES — FROM TOTE BOXES TO BARGES — FREIGHT PALLETS TO SHIPS

STRONGHOLD or SCREW-TITE

"ONE WAY" ANNULAR THREAD NAILS

"ONE WAY" SPIRAL THREAD NAILS

These great nails have gone to war in the shipyards of the Nation — in its War Production Plants — in many projects of the Army, Navy and other War Agencies. In War Production Plants — both Stronghold and Screw-Tite Nails are employed to build super-strong Tote and Shop Boxes, Carboy Cases, Pallets and Skid Platforms, Floors, Crates and Packing Cases for over-seas and long distance domestic shipments as well as for other wooden fabricated articles subject to hard use.

Stronghold and Screw-Tite Nails, hot galvanized, are used in shipyards for building various types of wooden boats and ships. Products formerly made of hard-to-get metals, are today re-designed for wood construction, employing these powerful fastenings in many ways.

If you require strong, fool-proof anchorage for freight car lagging or banding, here is the answer to your problem, for these Threaded Nails drive as easily as ordinary nails, but once driven home — they stay for good — can't let go — back up or pop out.

Stronghold and Screw-Tite Nails are available in a wide variety of sizes, metals and finishes, and can be furnished in hardened steel where hard woods or sheet metal must be penetrated.

Whatever your wood fastening problem may be, we will gladly help and without obligation send you a generous supply of nails for test purposes.

Write Today.

INDEPENDENT NAIL & PACKING COMPANY

BRIDGEWATER - MASSACHUSETTS

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**Long Distance tolls cut
the Distributor's gross
from \$6⁰⁰ to \$2⁰⁰**



..But his customer got the Gauges in time!

Recently a Purchasing Agent handed a Distributor's salesman an order for a set of Gauges—normally a stock item with any well-equipped Jobber.

But the local factories are loaded up with precision work—first it seemed Gauges would be hard to find, finally the salesman admitted none were to be had.

"We haven't quit trying," he reminded the P. A.—from his own office he called a responsible manufacturer 600 miles away. "Yes," replied the Gauge man, "we have some of those sizes and will ship today."

This incident is typical of the unusual services that many Mill Supply Distributors are rendering their customers during the Emergency.

When the Distributor billed the job, he added \$6.00 normal gross profit. Then he paid the Telephone Company a \$4.00 toll, leaving \$2.00 for himself. Still he feels he is away ahead because one of his standard policies is to say "thanks—sure we'll take care of you on every order."

You like to do business with firms like that and so do we. Years ago we began appointing them *our* Distributors—and *your* close-at-hand source of supply for Cle-Forge High-Speed Drills and Peerless High-Speed Reamers throughout Industrial America.



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"CLEVELAND" DISTRIBUTORS EVERYWHERE ARE READY TO SERVE YOU

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HOW to guide the hand that holds this authority...

Your product may be okayed by a war plant's engineers...acceptable to management...requisitioned by foremen...yet, miss out on the order. For, today, final buying decisions in the majority of plants have been vested in a single authority with power to make the selection regardless of the brand named on the requisition.

Purchasing Agents Rule Procurement

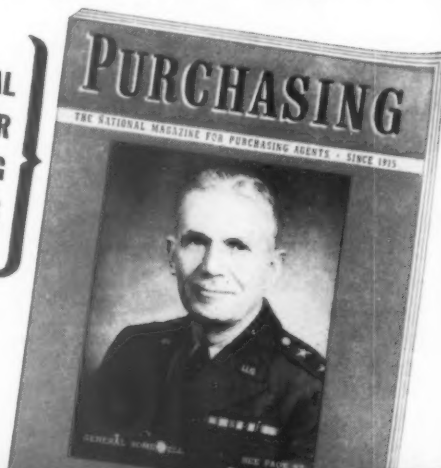
Every phase of procurement is now headed-up by the Purchasing Agent. His department is a clearing house for engineers' reports, performance records, manufacturers' data, availability and costs of all plant supplies. It not only is the *first* point of contact in establishing your product on the "approved list"; but also, it holds *final* authority to switch orders *to* or *from* any product on the list.

Does the P.A. Know Your Story?

Can you count on busy plant men to pass on your sales message to purchasing executives? To give you

thorough coverage of centralized purchasing departments throughout American war industries, you need **PURCHASING!** 205 East 42nd St., New York City; 333 N. Michigan Ave., Chicago; Leader Bldg., Cleveland.

THE NATIONAL
MAGAZINE FOR
PURCHASING
EXECUTIVES



A CONOVER - MAST PUBLICATION

??? AT THE END OF THE WAR

Uppermost in the minds of many business executives, political leaders, and economists is the question of whether this country faces a major economic collapse at the end of the present conflict, or whether the termination of the war marks the beginning of a business boom, and if so, whether the period of economic prosperity will be of short duration or long lived.

There are many schools of thought on this momentous subject, some approaching it from varied angles, while others arrive at differing conclusions though utilizing similar bases and avenues of approach.

Most recent of the studies available to the public is one prepared by Harold G. Moulton and Karl T. Schlotterbeck, titled "Collapse or Boom at the End of the War?", and published by the Brookings Institution, Washington, D. C.

Reviewing the conditions that prevailed following the conclusions of the War of 1812, the Civil War, and the First World War, these collaborators declare that were history to repeat itself, the termination of the present war would be followed by a period featured by a moderate business recession, say for a period of six months. This in turn would be followed by a quick business recovery and general expansion based on consumer goods production and rising prices. Within a year, however, there would be a price collapse and a comparatively short but severe depression period.

However, it is pointed out that the conditions which will exist at the end of this war, will be basically different from the conditions that prevailed at the end of the former wars. First, this war is in the immediate wake of a decade of world wide economic disruption. And second, not only is it being waged on a much



Never before have shipments been so valuable nor shipping conditions so hazardous. The rugged strength of SAFETEX GUMMED TAPE—its tremendous power to take hold and hang tough — insures every container a safe delivery.

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PULL-TAB OPENER
IN EVERY ROLL
SAVES TIME AND TAPE



"Don't Look Now, but—"

Right now we can't take our eyes off *this* job—making war stuff for Uncle Sam. But *after* the war we'll be looking plenty—looking for *your* production headaches.

We can help you. Our plant has grown by leaps and bounds. It's equipped with the most scientific modern machinery. Whatever you want—if it's stamped out of metal, or if it's plastics or plated—we're the ones who can lay it on the line in jig time.

When you get the green light again, call in Campbell. *Campbell can make it!*

A. S. CAMPBELL COMPANY, Inc.
East Boston, Mass.

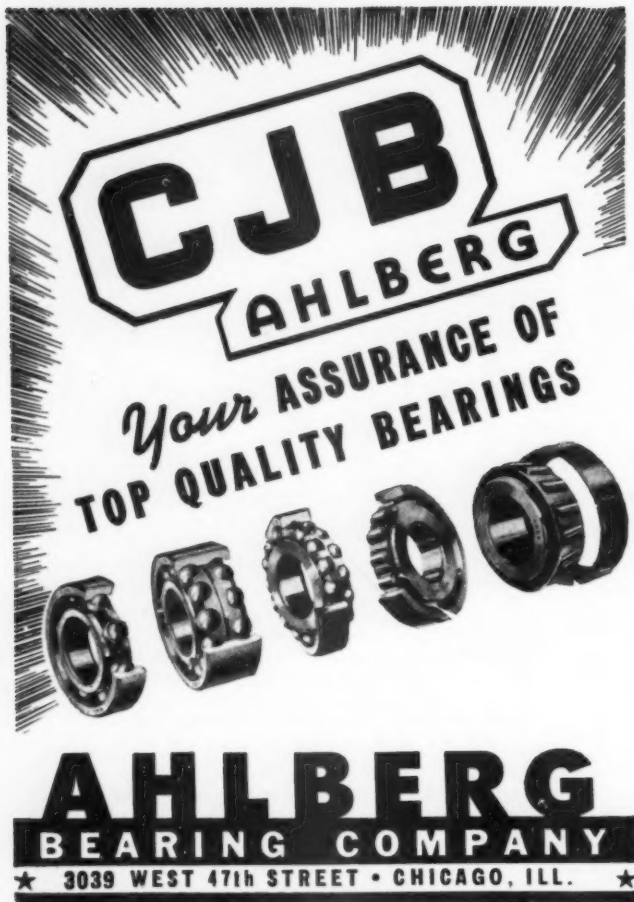
YESTERDAY—Cello Bumper Guards
License Frames • Nojax Flat Tire Trucks

TODAY—Up to our necks in war work

TOMORROW—Tell us what you want

CAMPBELL can make it!

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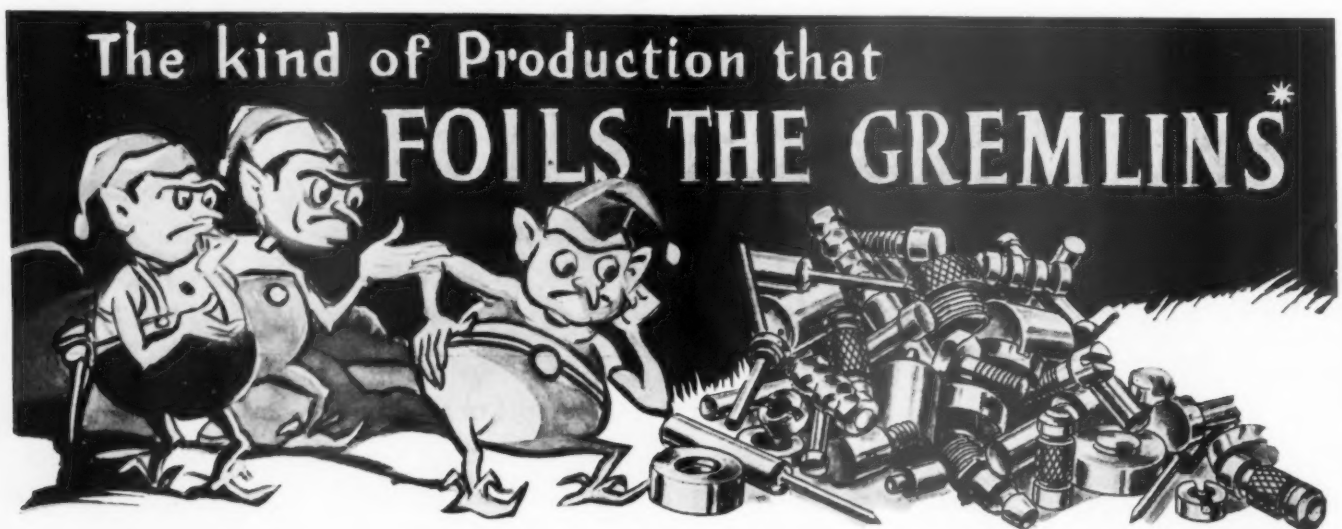
★ 3039 WEST 47th STREET • CHICAGO, ILL. ★

broader scale, but it is featured by "a much more intense and concentrated utilization of economic resources." Moreover, greater property and wealth destruction is now being wrought, and it is felt that before the Axis forces are defeated, a large part of the production, transportation, public utility and other services as well as residential and industrial properties will have been destroyed. The thought is expressed that the subsequent destruction of accumulated capital coupled with the general impoverishment of all peoples, makes a comparison with conditions following previous wars impracticable.

It is pointed out that there was a relatively quick recovery following the First World War, in this country and abroad, and this fact of itself might serve as a beacon to soften fears that may now be entertained. However, it is emphasized that the logical procedure and process would be to evolve an hypothesis of conditions that may exist at the end of the current war, with the facts of conditions following the First World War.

Defining the favorable factors, the study states that though the problem facing industry in the reabsorption of the ten million servicemen who will be released seems to present many serious aspects, it should be borne in mind that many conditions are now in the course of development that will preclude mass release of the armed personnel. Sporadic cessation of hostilities in different sections of the war area, along with the far-flung dispersal of the forces, salvaging, policing, relief and reconstruction activities, it is felt will result in gradual demobilization.

Secondly, considerable stress is laid on the factor of reconstruction requirements abroad, which will demand



The kind of Production that
FOILS THE GREMLINS*

The Purchasing Agent need not be a technical engineer to be sure of himself when ordering screw machine products. Merely write in the name NEWTON. No "Gremlins" will accompany the shipment! NEWTON is, and always has been, a guarantee of size accuracy and output uniformity . . . prime essentials in peace time, definite "musts" in war production, where smooth assembling often helps to meet difficult schedules.

*GREMLINS — Mythical war time interlopers with mechanical functions. Counterpart of the well-known "monkey wrench"!

NEWTON SCREW MACHINE PRODUCTS
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from this country vast supplies in the form of foods, clothing, medical supplies, construction materials, raw materials, and varying types of industrial equipment.

The third factor to be considered lies in our own shortages of consumer goods. It is felt that there will be an immense backlog of requirements because of the elimination of production in many lines and severe curtailment in others, and, the replacement needs in the inventories of retailers, raw material producers, and manufacturers will be far greater than they were at the close of the last war.

In addition, rehabilitation needs in American industry will require immense quantities of material and equipment in their reconversion to peacetime operation. Because of the time element involved in the making of these changes, and because of costs, it is concluded that some complications may arise, but demand for materials will stimulate activity in many industries. It is felt that the requirements of reconversion and rehabilitation of industry will be far greater than at the close of the last war.

Another important element that it is felt will go far in a post-war reconstruction program, is the housing situation. As is well known, activity in new housing has not kept pace with national needs, and it is the opinion that industrial housing in connection with the war production program will not be a factor of great importance so far as national housing requirements are concerned. On the other hand, there will be urgent need for new housing facilities because of wartime marriages and the latent general want for new houses.

From the standpoint of consumer buying power, it is declared that heavy taxes and greatly increased living costs will bring about reduced income or decreased buying power so far as the salaried, middle income and



VICTORY on the production front is being aided mightily by the economical and faithful service of thousands of Valley motors and grinders in war plants everywhere.

Prompt delivery of Valley Equipment can be obtained by those authorized to purchase.

Valley Ball-Bearing Motors from 1/2 h.p. to 75 h.p. . . Grinders from 1/4 h.p. bench type to 5 h.p. pedestal models.



VALLEY ELECTRIC CORP.

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If it's MILITARY HARDWARE

It's a Judd Job

If it's small metal parts — cast, spun, threaded, tapped, formed, stamped, plated, riveted, or almost anything else — *it's a Judd job.*

RIGHT NOW, we can guarantee unusually fast service on formed wire, brass castings, or other brass parts. But we're also ready to handle other work *fast and well.*

Ordinarily, we make drapery fixtures and house-furnishing hardware. But we've converted to war work . . . have delivered hundreds of millions of pieces to prime contractors and directly to U. S. Government procurement offices — meeting all their specifications as to both *quality* and *delivery dates.*

Details of Judd war service available in War Contracts Bulletin. Use coupon for free copies. Or wire or phone our New York Office; ask for War Contracts Manager, at Worth 2-3653.

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**In A SINGLE OPERATION—
 FASTER
 De-burring, Finishing, Polishing**
 Because "The Soft Rubber Binder
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Brightboy bridges the gap between a grind and a buff. Ready for immediate use. Made in wheels, blocks, sticks, rods and special shapes. Information and prices from your dealer or

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wealthy classes are concerned. On the other hand, as compared with the 1919 period, the buying power of labor per se will be much higher.

It is also seen that the factor of consumer buying power will be materially influenced by the fact that private debts will have decreased, and Government bond holdings in the hands of the masses will constitute large reserves that will be felt in the consumer goods markets. Also, the clamping down on installment purchasing during the war, paves the way to a new program of extensive installment buying, and likewise present credit restrictions open the way for expanded store credits following the war.

As to agriculture, the outlook is declared to be fairly good, and for at least one harvest there will be enormous foreign demand for American farm products. Also, because of a general tendency to liquidate obligations, rather than buying acreage at inflated prices, the farming element should be in an improved position so far as the buying of new equipment is concerned.

Because of a general better understanding of economic conditions, it is asserted that the inflation factor will be of less moment than at the close of the last war, and as a result there will less downward readjustment of prices needed to bring about what might be termed normal conditions.

Mention is also made of the factor of new methods, new processes and new materials that have been evolved in the past few years. Developments that have taken place in the field of synthetics such as plastics and rubber, and the new alloys in both the ferrous and non-ferrous field, and new equipment, of which little is known at present, bid fair to play an important role in the reconstruction period as being basic in the creation of new industrial and manufacturing plants.

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Patented
TURN-CUFF
Industrial Gloves
 For Maximum Protection

*More Safety
 for Productive
 Hands*

Surety
SURESEAL
Synthetic Gloves
 For Maximum Glove Life

*Increased
 Economy for
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Two factors determine rubber or synthetic rubber industrial gloves' true value. First—will they provide maximum hand protection? Second—will they give maximum service life? The answers can only be conclusively proved by tests and comparisons in actual use—Surety patented Turn-Cuffs offer extra protection to hands subjected to acids, chemicals and other injurious liquids and Surety gloves in all types are normally available in SureSeal synthetic rubber to withstand unusual conditions longer. Your own tests will verify Surety gloves' superiority.



INFORMATIVE LITERATURE

free While it is not always possible to make delivery of Surety gloves because of war needs, you will want the authoritative facts offered in the new literature with descriptions and comparative test reports. Send today.

Largest and Original Producers of Synthetic Gloves
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**HACK
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They Satisfy

From Coast to Coast men who have metal cutting jobs are finding LENOX the answer to their problems. Distributors everywhere stock LENOX and will serve you. Why not join the hundreds of Purchasing Agents who buy LENOX?

"The Blade in the Plaid Box" AMERICAN SAW & MFG. CO.

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Are you keeping up with MODERN BUYING METHODS?

Do you want to be posted each month on the most efficient purchasing practice? Then simply fill out and return the coupon below. One good idea in a single issue of Purchasing will amply repay the nominal cost of only \$3.00 for 12 issues. (In Canada \$4.00.)

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205 East 42nd Street, New York, N. Y.

You may send me PURCHASING for One Year @ \$3.00. (Canada \$4.00.)

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TISSUE TIPS by VICTORIA



EVERYBODY LIKES
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Single Fold, Double Fold or Black Core—for dependable quality.
Victoria Paper Mills Co., Fulton, N.Y. Craftsmen in paper-making since 1880.

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GOOD-BYE RED TAPE!

PURCHASING's "Red Tape" campaign brings prompt war procurement reforms!



- **Midsummer, 1942** — Colossal growth of red tape in Army procurements had become a menace to war production.
- **Sept. 8th** — Publishers of **PURCHASING** decided to do something about it . . . launched first of series of editorials citing specific cases and suggesting solutions.
- **Sept. 14th** — Office of Chief of Ordnance advised **PURCHASING** that specific contracts discussed in article were under review.
- **Sept. 21st** — **PURCHASING's** Editor, Stuart Heinritz, invited to serve with Division of Procurement Policy of W.P.B.
- **Oct. 26th** — Special committee of Procurement Division of Service of Supply outlined comprehensive investigation to establish simplified standard procedure for all Army Procurement. Lt. Col. Houston of this committee told **PURCHASING**: "Your article fired the fuse which set this program in motion . . . saved S.O.S. at least 4 months."

Aggressive Editing that Insures Readership for Your Advertisements

PURCHASING's "Red Tape Crusade" is typical of the alert, competent editing which gives this publication intense reader-interest among the buying authorities of American war-production industries. It's the kind of editing that insures best readership for any advertisement appearing with it.

What's more, **PURCHASING** reaches the *key men* of industrial buying . . . the executives of every centralized purchasing department. These men, of necessity, must be your *first* contact in establishing your products on an "approved list." And they hold *final* authority in making selections from this list!

Advertise in **PURCHASING** and your sales message will get both readership and complete coverage among these men who rule war plant procurements. **PURCHASING** is the *National Magazine for Purchas-*

ing Executives! **PURCHASING**, 205 East 42nd Street, New York; 333 North Michigan Avenue, Chicago; Leader Building, Cleveland; Duncan A. Scott, West Coast Representatives, San Francisco, Los Angeles.

**THE NATIONAL
MAGAZINE FOR
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EXECUTIVES**



A C O N O V E R - M A S T P U B L I C A T I O N

Factors that are termed unfavorable, are also numerous. In this category what is termed the Unprecedented Size of the Employment Problem, is given first place. Not only is a huge proportion of our population engaged in the armed forces—10% as against 4% in the last war, but the number engaged in industrial requirements is also much greater. These facts presuppose the problem of providing employment for a far greater number of people, which means supplying more jobs than before the war—a problem that is made more complex by the intensive centralization of industry and a shifted population.

Another disturbing factor of no small portent, lies in the reconversion of industries. During the present conflict industries have been converted to war production wholesale, and in many instances the transformation has been utterly complete. Not only will it take time and money to reconvert these industries, but in many instances this rehabilitation will include complete revamping in line with new technological advances.

There is also the contemplated dire shortage of working capital, in contrast with the condition that existed at the close of the last war. It is felt that the working capital of many lines of business will be greatly impaired, not only because of increased taxes and higher production costs, but industries that have not actively participated in war production and hence will suffer decreased production because of production stoppages and rationing, will have greatly reduced earnings.

Little relief from the tax-load is in prospect in the early postwar period, and it is felt that this will have an important bearing on business earnings available for corporate uses, as well as upon the cost of doing business.

Another adverse factor is found in the fact that dur-

Exact Weight Scales

for Volume Sacking
from Bulk . . .



MODEL
2225

Volume sacking operations are a matter of good equipment. EXACT WEIGHT Sacking Scales are that kind of equipment delivering from five to eight bags per minute with any free flowing material. They combine proven bag-holders for paper or cloth, accurate scale for weighing, flow valves that work smoothly and all these features with trouble-free operation. Write for the facts for your plant.

The
Exact Weight
Scale Company

211 W. Fifth Ave., Columbus, Ohio



THERE IS NO SUBSTITUTE FOR EXACT WEIGHT
**INDUSTRIAL
PRECISION SCALES**

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Here's Why ELECTRICAL MANUFACTURERS buy IRV-O-LITE XTE-30

The Rubicon Company has used IRV-O-LITE for two years to insulate the intricate wiring of laboratory instruments. In the photo above, a length of bus bar insulated with XTE-30 is being formed and cut to fit a potentiometer circuit.



WHETHER used as wiring or lug insulation or as conduit, this extruded plastic tubing will do a good job even under difficult conditions. It has been employed on tiny, fractional horsepower motors and on giant aircraft; in the construction of sensitive laboratory equipment and in rough-riding Army tanks.

IRV-O-LITE XTE-30 is suitable for such diverse installations because random samples consistently live up to these standards:

Dry Dielectric Strength	750 VPM
Wet Dielectric Strength	350 VPM
Tensile Strength Lbs. per Sq. In.	2,150
Elongation	250%
Resistance to Brittleness. Standard wall XTE tubing does not shatter when slowly pinched with pliers at	-40 deg. F.
Life at 105° C.	400 hrs.
Wemco Oil Immersion 48 hrs. at 100° C.	Intact, can be flexed
Resistance to 50% Sulphuric Acid at 72° F.	Unaffected
Resistance to 30% Sodium Hydroxide at 72° F.	Unaffected
Resistance to Mineral Solvents	Excellent
Resistance to Coal Tar Solvents	Good

In addition to being unusually flexible and elastic over a wide range of temperatures, XTE-30 tubing is also highly resistant to tearing and abrasion.

IRV-O-LITE XTE-30 is produced in sizes ranging from A.S.T.M. No. 24 to 1½" I.D. and in six opaque colors, black, green, white, yellow, red and blue, to simplify identification of circuits. Standard lengths are 36-inch pieces and 25-ft. coils. Continuous length coils and cut pieces from ¼" to 12" can also be furnished.

NEW! Most recent addition to the Irvington Fibronized tubing line, XTE-130 was developed to withstand unusually high temperatures. Samples of No. 9 opaque have yielded an oven life of 500 hrs. at 125° C. (257° F.), 1000 hrs. at 105° C. (221° F.).

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ing this war there has been a great increase in the prices of raw materials, these prices having jumped nearly twice as much as those for manufactured products. There have also been wage advances, and it is felt that difficulty will be experienced in bringing about wage reductions and raw material prices to correspond with decreased manufacturing production. It is felt that maintenance of high wage and raw material prices will result in profits that are termed "precarious", and this of itself will have an important bearing on the matter of re-employment.

Posing the question, "Will the situation be more, or less, favorable than that of 1919?", and also, "How will it compare with the situation in the years just preceding this war?", the conclusion is broached that post-war conditions will be less favorable than in 1919, and that the economic situation during the two years following the war, may be decidedly better than that of the late thirties.

It is felt that government participation in post-war problems, involving slow demobilization, participation in reconstruction programs abroad, employment on public enterprises, and maintenance of price control programs, will have far reaching effect in the problems of stabilization, though it is expressed that maintenance of a government price control program will adversely affect the problem of re-employment.

The real test, it is stated, will come after the period of transition which of itself will not provide a solution for the nation's economic problems on a long term basis. The latter will be determined by sane solution of such things as the staggering public debt and unbalanced budget, international relations, adjustment of agricultural issues, the labor-management problem, maintenance of balance between production and consumption, and intelligent cooperation between the body politic and industry.

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6. You cannot keep out of trouble by spending more than your income.
7. You cannot further the brotherhood of man by inciting class hatred.
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10. You cannot help men permanently by doing for them what they could and should do for themselves.

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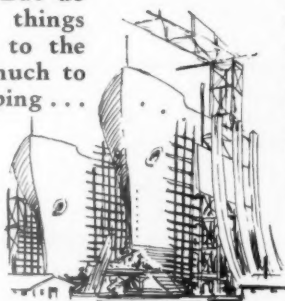
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